School Environmental Assessment Manual (SEAM)

INTERIM GUIDANCE DOCUMENT FOR ENVIRONMENTAL ASSESSMENTS AND INVESTIGATIONS OF SCHOOL SITES

Department of Toxic Substances Control
California Environmental Protection Agency
August 2008

FORWARD

Funding for development of this guidance document was provided by the United States Environmental Protection Agency under the State Response Program Cooperative Agreement Grant.

This guidance document is issued as interim and is subject to review and revision as necessary. It should not be considered enforceable or regulatory in nature, and does not have the force or effect of law or regulation. Mention of trade names or commercial products does not constitute endorsement by DTSC.

Issuance of this guidance document does not invalidate Phase I Environmental Site Assessments, Preliminary Environmental Assessments, or Supplemental Site Investigations completed prior to its release. For assessments or investigations in progress upon issuance, this guidance document should be followed as much as possible where feasible.

This guidance document should be used in conjunction with the most current DTSC advisories, fact sheets, and guidance documents available through links on the DTSC website, "Evaluating and Cleaning-Up School Sites," at <http:// www.dtsc.ca.gov/Schools/index.cfm>. Use of this guidance is not a substitute for professional judgment exercised by qualified environmental assessors conducting assessments and investigations.

Copies of this guidance document may be obtained through links on the DTSC website, "Evaluating and Cleaning-Up School Sites," at <http://www.dtsc.ca.gov/Schools/index.cfm>.

Please direct questions regarding this guidance to:

Triss Chesney
Brownfields and Environmental Restoration Program
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630-4732
Phone: (714) 484-5447
Fax: (714) 484-5302
E-mail: tchesney@dtsc.ca.gov

SUGGESTIONS

As a user of this guidance document, your suggestions are important. Use the form on the back of this page to suggest improvements to this guidance document and attach additional sheets, if necessary. Please submit your completed form by standard mail, facsimile, or e-mail to:

School Environmental Assessment Manual Suggestions
Attn: Triss Chesney
Brownfields and Environmental Restoration Program
Department of Toxic Substances Control
5796 Corporate Avenue
Cypress, CA 90630-4732
Phone: (714) 484-5447
Fax: (714) 484-5302
E-mail: tchesney@dtsc.ca.gov

Your suggestions will be considered for the next revision of the guidance document.

SUGGESTION FORM

SCHOOL ENVIRONMENTAL ASSESSMENT MANUAL (SEAM)
GUIDANCE FOR ENVIRONMENTAL ASSESSMENTS AND INVESTIGATIONS OF SCHOOL SITES
NOVEMBER 2008

Contact Information

Providing contact information is optional; however, including this information will help us follow-up and address your comments.

Name			
Agency/Company			
Street Address			
City		**State**	**Zip Code**
Phone Number	**E-mail Address**		

Suggestion

Section Number	**Section Title**
Suggestion	

EXECUTIVE SUMMARY

This guidance document applies to school districts, county offices of education, and charter entities seeking state bond funding pursuant to the Leroy F. Greene School Facilities Act of 1998 (Ed. Code, tit. 1, § 17070.10 et seq.) to acquire, build upon, or expand school properties in accordance with Education Code section 17078.54, subdivision (c)(1)(A) (charter schools) or sections 17268 and 17213.1 (public schools).

These statutes require environmental review, under Department of Toxic Substances Control (DTSC) oversight, of proposed acquisition of school sites and construction of new school buildings, with the exception of minor additions categorically/statutorily exempt from the California Environmental Quality Act pursuant to Education Code section 17268, subdivision (c).

This guidance document is intended for use by school districts, county offices of education, charter entities, and their qualified environmental assessors. It is intended to serve as a comprehensive reference for conducting the following environmental assessments and investigations in accordance with the Education Code:

- Phase I Environmental Site Assessment (Phase I) and Phase I Addendum
- Preliminary Environmental (or Endangerment) Assessment (PEA)
- Supplemental Site Investigation (SSI)

This guidance does not address cleanup (removal or remedial actions), which are conducted pursuant to Health and Safety Code, division 20, chapter 6.8 (Health & Saf. Code, § 25300 et seq.).

This guidance document integrates available DTSC advisories, fact sheets, and guidance documents into the school environmental review process. Appendices include annotated samples of documents submitted to DTSC with subject-matter headings and associated information. The body is organized into the following five chapters:

- **Chapter 1** describes the purpose, organization, and use of this guidance document.

- **Chapter 2** describes the environmental review process for school sites. This includes history of DTSC involvement in school sites, an overview of the California school site and plan approval process, and how environmental review conducted under DTSC oversight fits into the overall process. This chapter also describes statutory requirements, cost recovery agreements, environmental assessor qualifications, roles and responsibilities of parties involved, and document submittal.

- **Chapter 3** summarizes the Phase I and Phase I Addendum processes, including objectives, requirements, and oversight cost. This chapter also describes possible determinations, recommended supplemental evaluation areas, and areas not addressed by DTSC.

- **Chapter 4** summarizes the PEA process, including objectives, requirements, and oversight cost. This chapter also describes scoping meetings, public participation activities, human health screening approaches, possible determinations, available sampling guidelines, and sampling methods.

- **Chapter 5** summarizes the SSI process, including objectives, requirements, and oversight cost. This chapter also describes scoping meetings, public participation activities, human health screening approaches, and possible determinations.

TABLE OF CONTENTS

FIGURES

TABLES

APPENDICES

ABBREVIATIONS AND ACRONYMS

ACM	asbestos-containing material
AML	abandoned mine lands
ASTM	American Society for Testing and Materials
CDE	California Department of Education
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
DGS	Department of General Services
dioxins	chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans
DSA	Division of State Architect
DTSC	Department of Toxic Substances Control
EDB	ethylene dibromide
EOP	Environmental Oversight Program
EOA	Environmental Oversight Agreement
HAZ	Hazardous substance removal certification for licensed contractors
K-12	kindergarten through grade 12
LEA	local educational agency
mg/kg	milligrams per kilogram
MTBE	methyl tertiary butyl ether
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOA	naturally-occurring asbestos
OCPs	organochlorine pesticides
OPSC	Office of Public School Construction
PAHs	polynuclear aromatic hydrocarbons
PCBs	polychlorinated biphenyls
pCi/L	picocuries per liter
PEA	Preliminary Endangerment Assessment or Preliminary Environmental Assessment
Phase I	Phase I Environmental Site Assessment
ppm	parts per million
PRP	potentially responsible party
REA	Registered Environmental Assessor
REC	recognized environmental condition
SAB	State Allocation Board
SFPD	School Facilities Planning Division
SSI	Supplemental Site Investigation
SFP	School Facility Program
U.S EPA	United States Environmental Protection Agency
USGS	United States Geological Service
VCP	Voluntary Cleanup Program

CHAPTER 1 INTRODUCTION

1.1 APPLICABILITY

This guidance document applies to school districts, county offices of education, and charter entities seeking state bond funding pursuant to the Leroy F. Greene School Facilities Act of 1998 (Ed. Code, tit. 1, § 17070.10 et seq.) to acquire, build upon, or expand school properties in accordance with Education Code section 17078.54, subdivision (c)(1)(A) (charter schools) or sections 17268 and 17213.1 (public schools).

These statutes require environmental review, under Department of Toxic Substances Control (DTSC) oversight, of proposed acquisition of school sites and construction of new school buildings, with the exception of minor additions categorically/statutorily exempt from the California Environmental Quality Act pursuant to Education Code section 17268, subdivision (c).

Existing schools that are not expanding or acquiring property with state funds are not subject to these provisions in the Education Code that required environmental review under DTSC oversight. However, some school districts have request DTSC assistance to address environmental contamination for existing schools. The process used by DTSC for environmental review of existing schools is provided in Appendix A.

Reference to school districts in this guidance is intended to include county offices of education and charter entities.

1.2 PURPOSE

The purpose of this guidance document is to provide a comprehensive reference for conducting the following environmental assessments and investigations for school sites in accordance with the Education Code:

- Phase I Environmental Site Assessment (Phase I) and Phase I Addendum
- Preliminary Environmental (or Endangerment) Assessment (PEA)
- Supplemental Site Investigation (SSI).

This guidance does not address cleanup (removal or remedial actions), which are conducted pursuant to Health and Safety Code, division 20, chapter 6.8 (Health & Saf. Code, § 25300 et seq.).

1.3 ORGANIZATION

This guidance document integrates available DTSC advisories, fact sheets, and guidance into the school environmental review process. Appendices include annotated

samples of documents submitted to DTSC with subject-matter headings and associated information. The body is organized into the following five chapters:

- **Chapter 1** describes the purpose, organization, and use of this guidance.

- **Chapter 2** describes the environmental review process for school sites. This includes history of DTSC involvement in school sites, an overview of the California school site and plan approval process, and how environmental review conducted under DTSC oversight fits into the overall process. This chapter also describes statutory requirements, cost recovery agreements, environmental assessor qualifications, roles and responsibilities of parties involved, and document submittal.

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- **Chapter 5** summarizes the SSI process, including objectives, requirements, and oversight cost. This chapter also describes scoping meetings, public participation activities, human health screening approaches, and possible determinations.

1.4 USE

This guidance is intended for use by school districts, county offices of education, charter entities, and their qualified environmental assessors to conduct environmental assessments and investigations. Chapters 1 and 2 provide background information necessary to use this guidance document as intended and understand the context of the DTSC environmental review process for school sites. Chapter 2 also provides information on general requirements or recommendations that apply to the environmental review process.

After reviewing Chapters 1 and 2, the reader can review and use Chapters 3, 4, and 5 and associated appendices as a site proceeds through the environmental review process.

CHAPTER 2 PROGRAM OVERVIEW

2.1 STATUTORY REQUIREMENTS FOR DTSC ENVIRONMENTAL REVIEW OF PROPOSED NEW AND EXPANDING SCHOOL SITES

Between 1995 and 1998, DTSC identified environmental contamination at several schools located on or close to contaminated industrial properties. Members of the state legislature conducted hearings to evaluate the concerns of communities and local officials regarding possible health impacts to students and staff.

On January 1, 2000, parts 10 and 10.5 of the Education Code were amended to require environmental review, under DTSC oversight, of properties prior to acquisition and/or construction of new school buildings using state bond funding (Ed. Code, §§ 17210, 17210.1, 17213.1, and 17213.2). Subsequent amendments further defined this process and included charter schools (Ed. Code, §§ 17078.54, subd. (c)(1)(A) and 17268). These statutes are intended to ensure protection of children, staff, community members, and the environment from potential harmful effects of exposure to hazardous materials on proposed new and expanding school sites.

Compliance with these statutes is required in order for school districts, county offices of education, and charter entities to qualify for and obtain state bond funding to acquire, build upon, or expand school properties, with the exception of minor additions categorically/statutorily exempt from the California Environmental Quality Act (Ed. Code, § 17268, subd. (c)).

Education Code sections 17210, 17210.1, 17213.1, and 17213.2 specify the comprehensive environmental review process for proposed new or expanding schools and require that response actions are conducted in accordance with Health and Safety Code, division 20, chapter 6.8 (Health & Saf. Code, § 25300 et seq.). These Education Code statutes authorize DTSC to evaluate naturally occurring hazards, such as petroleum deposits and naturally occurring asbestos, as well as methane generated from oil fields, and decomposition of organic material (e.g. landfills, dairies or fill/grading activities) in order to protect human health and the environment. Education Code references, cited above, are included in Appendix B.

2.1.1 State Bond Funding for New Construction and Modernization of Schools

The State Allocation Board is responsible for determine the allocation of state resources (proceeds from general obligation bond issues and other designated state fund) used for new construction and modernization of schools. To apply to the State Allocation Board for state bond funds, a school district is required to have California Department of Education approval for new school sites and new construction plans. Specific prior site determinations issued by DTSC (Ed. Code, § 17078.54, subd. (c)(1)(A) and § 17268)

are required to obtain this approval from the California Department of Education. An overview of the requirements for State Allocation Board Funding and California Department of Education Site Approval are shown on Figure 2-1. Additional detail on state bond funding for new construction and modernization of schools is provided in Appendix C.

Figure 2-1
State Allocation Board Funding and California Department of Education Site Approval

ACRONYMS:
CDE: California Department of Education
DSA: Division of State Architect
DTSC: Department of Toxic Substances Control
OPSC: Office of Public School Construction
SAB: State Allocation Board
SFPD: School Facilities Planning Division

NOTES:
(1) "SFPD 4.01 – School Site Approval Procedures," prepared by the California Department of Education, School Facilities Planning Division, revised February 2008.
(2) Approved Phase I or Preliminary Environmental (or Endangerment) Assessment.
(3) *An Overview of the State School Facility Programs,* prepared by the State Allocation Board, Office of Public School Construction, dated July 2008.

2.2 THREE-STEP PROCESS FOR ENVIRONMENTAL REVIEW OF NEW AND EXPANDING SCHOOL SITES

DTSC utilizes the following three-step process for environmental review of school sites, as shown in Figure 2-2 – Three-Step Process for Environmental Review of School Sites.

- Step One: Phase I and Phase I Addendum
- Step Two: PEA
- Step Three: SSI and other investigation and cleanup activities conducted pursuant to Health and Safety Code, division 20, chapter 6.8 (Health & Saf. Code, § 25300 et seq.).

Cost recovery mechanisms are shown on Figure 2-3. Detailed information on cost recovery and oversight agreements is provided in Appendix D. The process for Phase I, PEA, and SSI are detailed in Chapters 3, 4, and 5, respectively. Summary information for selected further action following the SSI is provided in Appendix E.

A school district may request final site or plan approval from the California Department of Education to seek full State Allocation Board site acquisition or new construction apportionment by completing DTSC requirements as indicated by:

- Phase I with determination of "no action"
- PEA with determination of "no further action"
- If a response action was required, DTSC determination of "no further action" or certified completion of a response action.

A school district may also seek final approval from the California Department of Education, prior to completing DTSC requirements, by meeting the requirements of and completing the following commitment forms:

- School Facilities Planning Division 4.14 form committing a school district to complete a Phase I Addendum, PEA, or response action for lead in soil from lead-based paint, organochlorine pesticides in soil from termiticide application, and/or polychlorinated biphenyls in soil from electrical transformers.
- School Facilities Planning Division 4.15 form committing a school district to complete a response action.

An overview of the relationship between these commitment forms and the DTSC environmental review of school sites is provided on Figure 2-4. Descriptions on the applicability and use of these forms in each step of the process are provided in the subsequent chapters.

Figure 2-2
Three-Step Process for Environmental Review of School Sites

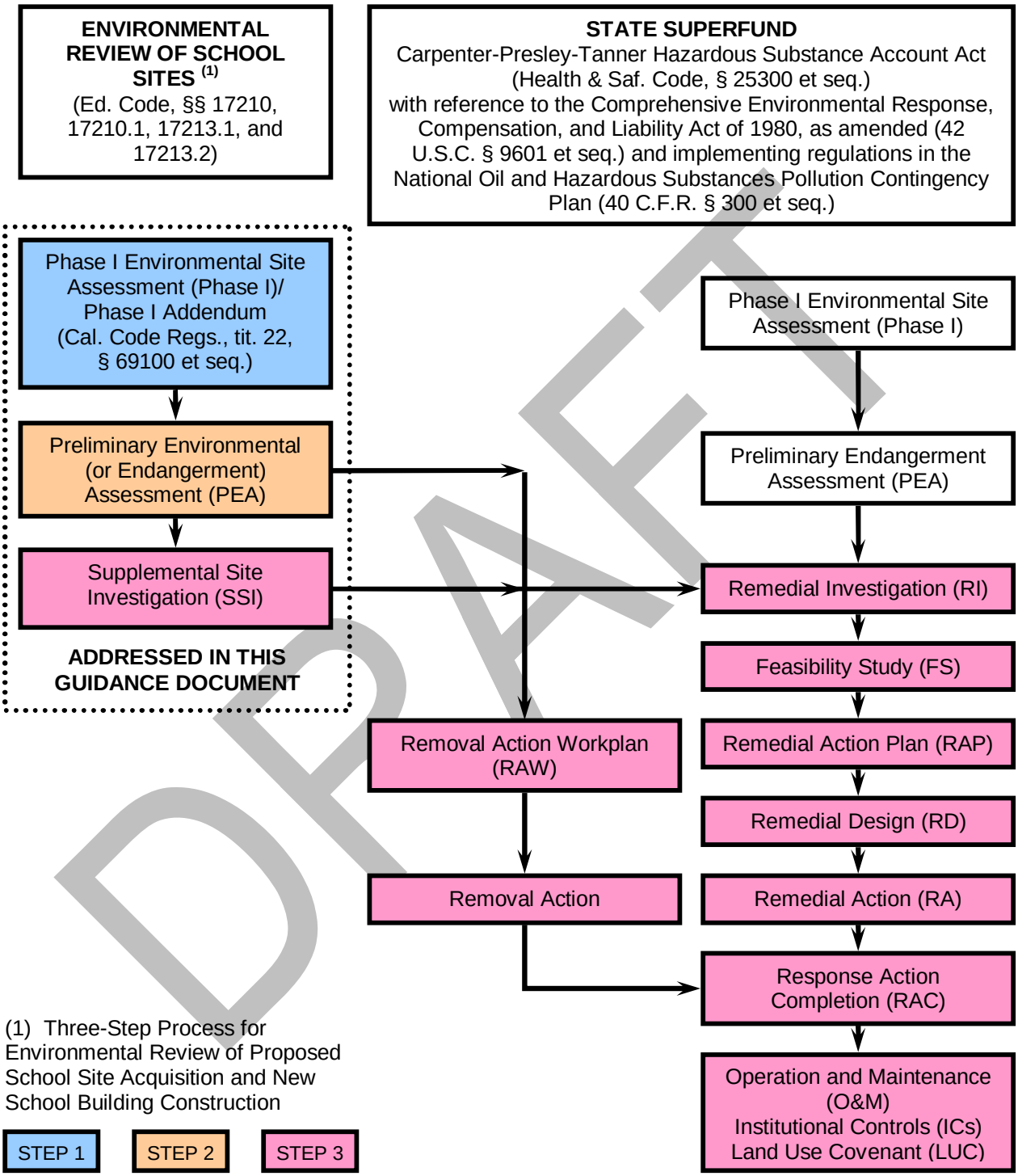
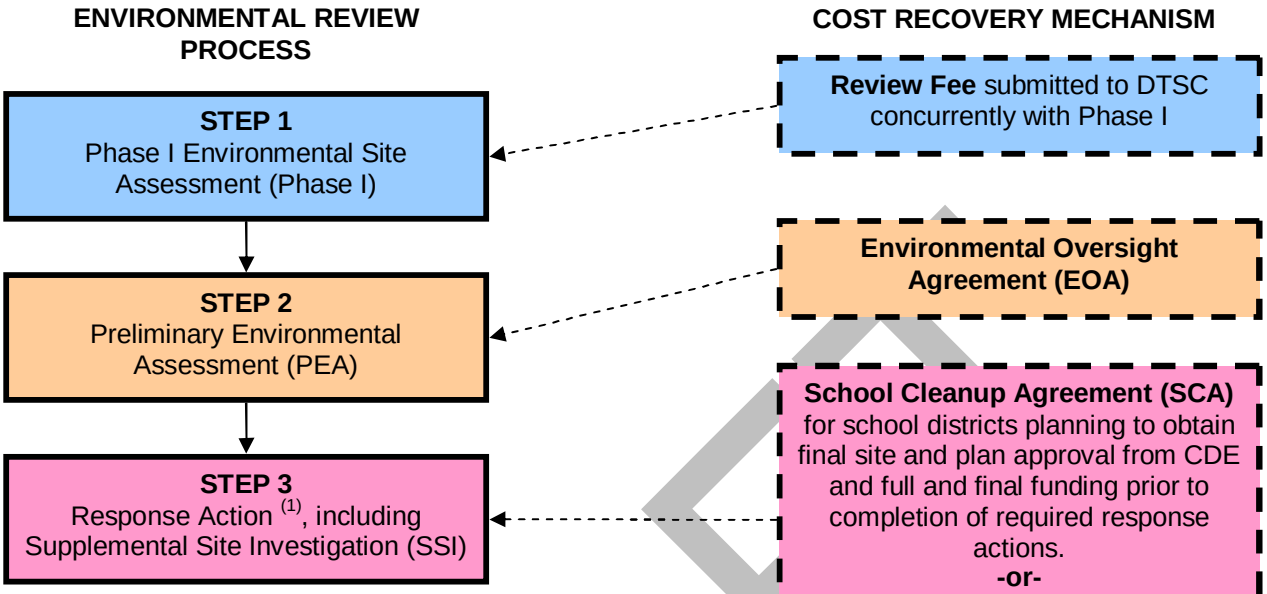
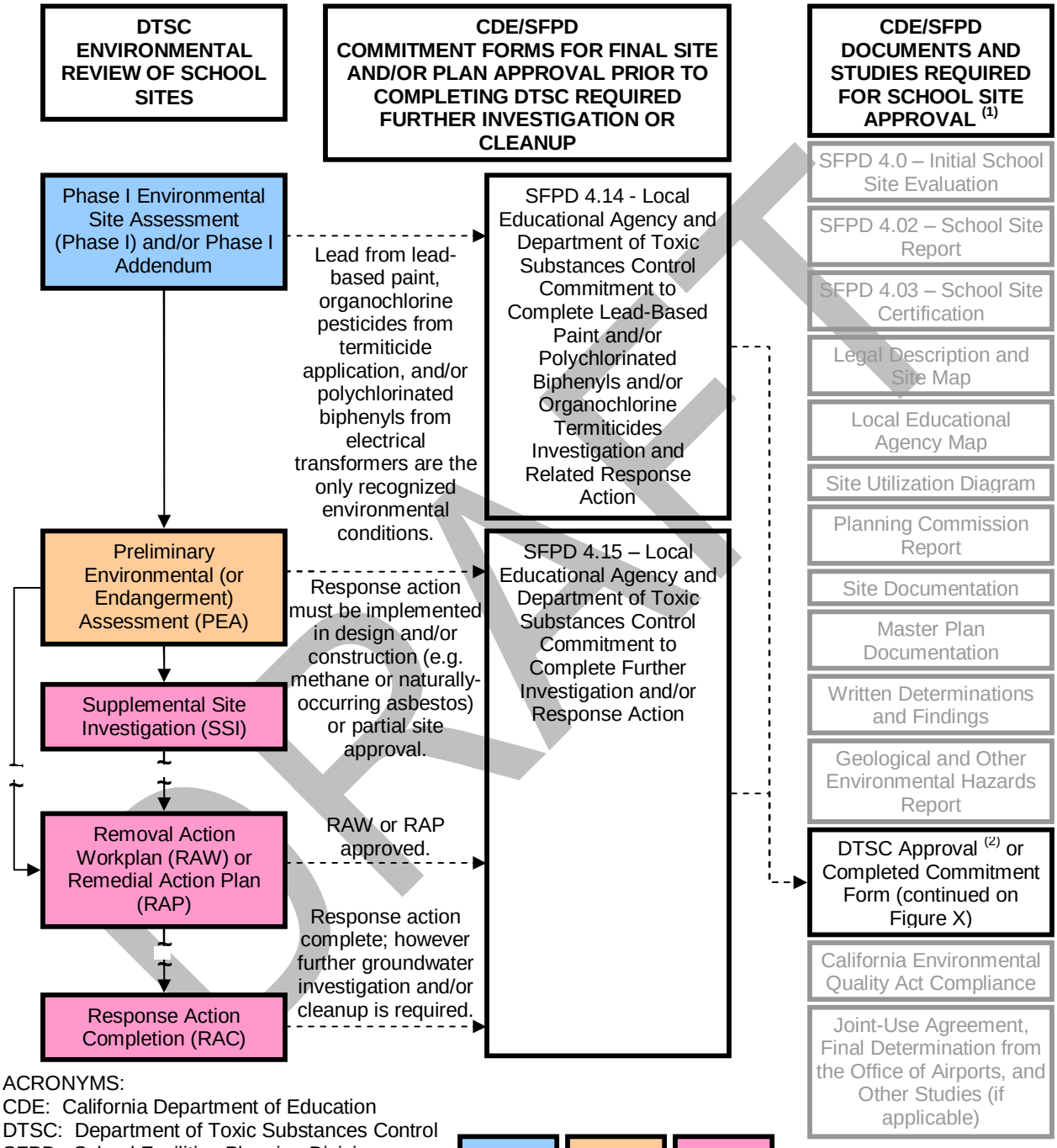


Figure 2-3
Cost Recovery Mechanisms



(1) Response Action may include the following: Supplemental Site Investigation (SSI), Remedial Investigation (RI), Feasibility Study (FS), Removal Action, Remedial Action, or Operation and Maintenance.

Figure 2-4
California Department of Education Commitment Forms and DTSC Environmental Review of School Sites



ACRONYMS:
CDE: California Department of Education
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NOTES:
(1) "SFPD 4.01 – School Site Approval Procedures," prepared by the California Department of Education, School Facilities Planning Division, revised February 2008.
(2) DTSC Approved Phase I or Preliminary Environmental (or Endangerment) Assessment.

2.3 ROLES AND RESPONSIBILITIES

DTSC, school districts, and environmental assessors have roles and responsibilities in the environmental review process for school sites.

2.3.1 DTSC

DTSC is responsible for overseeing the environmental assessments, investigations, and cleanups of proposed and expanding school sites. DTSC assigns a project manager to each project who also serves as the point of contact to the school district. The project manager may also confer with a support staff team, with members comprised of DTSC geologists, engineers, and toxicologists, depending on the scope of the project.

2.3.2 School District

The school district is responsible for the overall execution of the environmental assessment, investigation, and cleanup of school sites. The school district will provide DTSC with pertinent background information and documents at the onset of the project. The school district will submit required applications and agreements, and issue payments for DTSC-issued invoices within 60 days, or will issue additional payments for interest charges that may accrue. The school district will submit to DTSC reasonable schedules based on project completion targets, and will select qualified environmental assessor(s) and consultants to conduct school site assessments, investigations, and cleanups. The school district and their qualified environmental assessor should make a good faith effort to develop and submit quality documents that meet or exceed industry standards. The school district will make an effort to adhere to the agreed-upon schedules, and will promptly notify DTSC of any delays and/or changes in project status or site conditions. The school district will comply with applicable or relevant and appropriate federal, state, and local requirements, and will work collaboratively with DTSC to complete the scope of work specified in agreements.

The school district is ultimately responsible for the school project, as such, a school district representative should be involved in the environmental review process to ensure services provided by the environmental assessor are consistent with project direction, schedule, and costs. Additionally, it is important for school districts to actively participate in the environmental review process.

School district responsibilities include, but are not limited to:

- Contracts with a qualified environmental assessor to supervise the preparation of, and sign, a Phase I (Ed. Code, § 17213.1, subd. (a)) or PEA (Ed. Code, § 17213.1, subd. (a)(4)(B)) of the proposed school site.
- Submit a Phase I, proof of qualifications of the environmental assessor, and review fee to DTSC if the Phase I recommends no further investigation (Ed. Code § 17213.1, subd. (a)(2)).

- Enter into an agreement with DTSC for oversight and reimbursement of associated costs (Ed. Code, § 17213.1, subds. (a)(4)(B) and (a)(11), § 17213.2, subds. (a) and (h)).
- Submit the Phase I, including any additional information requested by DTSC, and the PEA to the Department of Education (Ed. Code, § 17213.1, subds. (a)(4)(A) and (a)(5)).
- Provide notice to residents in the immediate area prior to commencement of work on a PEA (Ed. Code, § 17210.1, subd. (b)).
- Publish a public notice that the PEA has been submitted to DTSC in a local newspaper of general circulation and at the proposed school site, hold a public hearing, and make the assessment and associated correspondence available to the public (Ed. Code, § 17213.1, subd. (a)(6)).
- Comply with Health and Safety Code public participation requirements if further response actions beyond a PEA are required (Ed. Code, § 17213.1, subd. (a)(7)).
- Evaluate the acquisition or construction project if further response actions beyond a PEA are required (Ed. Code, § 17213.1, subd.(a)(10)).
- Cease all construction activities and notify DTSC if, at anytime during construction at a school site, a previously unidentified release or threatened release of a hazardous material or the presence of a naturally occurring hazardous material is discovered (Ed. Code, § 17213.2, subd. (e)). Activities to address environmental findings during school construction are included in Appendix F.

2.3.2.1 DTSC RECOMMENDATIONS FOR SELECTION OF AN ENVIRONMENTAL ASSESSOR

The following list provides DTSC recommendations for selecting an environmental assessor:

- Contact other companies or organizations who have used environmental assessors for similar projects.
- Determine if the environmental assessor has experience obtaining approval from DTSC on similar projects.
- Request a statement of qualifications containing basic information on the company, staff and project experience.
- Check if an environmental assessor has effective working relationships with governmental agencies by reviewing agency files for comments on documents submitted. Most documents submitted for DTSC review are revised in the normal course of a project; however, long comment letters from DTSC and situations involving repeated rejection due to inadequate or poor preparation may be indicative of the quality of an environmental assessor.

  DTSC files are available for public review. To make an appointment to review files contact the file room technician in the DTSC Regional Office with a schools unit nearest you.

  Chatsworth Regional Office

9211 Oakdale Avenue
Chatsworth, California 91311
Phone: (818) 717-6500
FAX: (818) 717-6527

Cypress Regional Office
5796 Corporate Avenue
Cypress, California 90630-4732
Phone: (714) 484-5300
FAX: (714) 484-5302

Sacramento Regional Office – Cal Center
8800 Cal Center Drive
Sacramento, CA 95826-3200
Phone: (916) 255-3545
FAX: (916) 255-3785

Additional helpful information can be found in the *Guide to Selecting a Consultant* (DTSC 2001b).

2.3.3 Environmental Assessor

Environmental assessors are responsible for conducting the environmental investigations and submitting associated work product, including any required revisions to those documents and any additional information requested to make an informed decision, to DTSC per the school district's schedule. The environmental assessor must be qualified to conduct such work, and should be familiar with requirements included in Education Code, Health and Safety Code, and DTSC policies, procedures, and guidelines.

2.4 ENVIRONMENTAL ASSESSOR QUALIFICATIONS

School districts are required to contract with a qualified environmental assessor, as defined in Education Code section 17210, subdivision (b), before acquiring a school site or engaging in a construction project for which facility funding is being sought. Qualifications for environmental assessors and resources to verify registrations are provided in Table 2-1 – Environmental Assessor Qualifications and Documentation. An environmental assessor must possess the following qualifications:

- Class II Registered Environmental Assessor registered by the DTSC pursuant to Chapter 6.98 (commencing with Section 25570) of Division 20 of the Health and Safety Code (On January 1, 2003, the REA program was transferred from the Office of Environmental Health Hazard Assessment to DTSC with the passage of Senate Bill No. 1011(2001-2002 Reg. Sess.) amending Health and Safety Code sections 25570.2, 25570.3, and 58004.5).
- Professional Engineer registered in the State of California.
- Professional Geologist registered in the State of California.
- Certified Engineering Geologist registered in the State of California.

- Licensed Hazardous Substance Contractor certified pursuant to Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code. A licensed hazardous substance contractor shall hold the equivalent of a degree from an accredited public or private college or university or from a private postsecondary educational institution approved by the Bureau for Private Postsecondary and Vocational Education with at least 60 units in environmental, biological, chemical, physical, or soil science; engineering; geology; environmental or public health; or a directly related science field.

In addition to the qualifications identified above, environmental assessors working on school sites must also possess the following experience:

- Phase I – at least three years of relevant experience by reference to ASTM Standard E1527-05 (Cal. Code Regs., § 69104, subsec. (b)). Although the Education Code requires a minimum of two years of experience (Ed. Code § 17210, subsec. (b)), subsequent regulations (Cal. Code Regs., §§ 69104, subsec. (b) and 69103, subsec. (a)(1)) refer to ASTM Standard E1527-05 which requires three years of relevant experience for environmental professionals. ASTM Standard E1527-05 was prepared in conjunction with federal regulations for "all appropriate inquiries" requires that an environmental professional must have three years of relevant experience (40 C.F.R. § 312.10(b)).
- PEA – at least three years of experience in conducting PEAs (Ed. Code, § 17210, subd. (b)).

In addition to qualifications and experience required to work on school sites, requirements exists for specific work that may be conducted during environmental assessments, investigations, or cleanup of school sites:

- All engineering work shall be conducted in compliance with the Professional Engineers Act (Bus. & Prof. Code, § 6700 et seq.) and Rules of the Board for Professional Engineers and Land Surveyors (Cal. Code Regs., tit. 16, § 400 et seq.).
- All geologic work shall be conducted in compliance with the Geologist and Geophysicist Act (Bus. & Prof. Code, § 7800 et seq.) and Rules of the Board for Geologists and Geophysicists (Cal. Code Regs., tit. 16, § 3000 et seq.).
- Contractors engaging in removal or remedial actions must be a licensed hazardous substance contractor with the Contractors' State License Board (Bus. & Prof. Code § 7058.7).

2.5 DOCUMENT SUBMITTAL

All documents submitted to DTSC should be prepared in accordance with federal, state and local requirements, guidance and advisories. Although documents are typically designated as draft when initially submitted for DTSC review, they should be complete, factual, accurate, and suitable to support public record. This includes providing objective conclusions and recommendations supported by environmental assessment or investigation results. Information should be presented in an organized and professional manner.

All documents submitted to DTSC, regardless of stage of review, should include proof of qualifications for registration and experience. Proof of qualifications to be included in documents submitted to DTSC are included in Table 2-2 – Environmental Assessor Qualifications and Documentation.

For all documents submitted to DTSC, one hard (paper) copy and one electronic copy in Adobe Portable Document Format (PDF) in accordance with the guidelines in Appendix G.

Table 2-1
Environmental Assessor Qualifications and Documentation

REGISTRATION		VERIFICATION OF REGISTRATION	EXPERIENCE FOR ALL REGISTRATIONS	PROOF OF QUALIFICATIONS TO BE INCLUDED IN DOCUMENTS SUBMITTED TO DTSC
Class II Registered Environmental Assessor		Department of Toxic Substances Control http://www.dtsc.ca.gov/database/REA/rea_search_form.cfm	**Phase I** 3 years *(Cal. Code Regs., §§ 69104, subsec. (4) and 69106, subsec. (a)(1))* *ASTM Standard E1527-05* *(40 C.F.R. § 312.10(b))* **PEA** 3 years *(Ed. Code, § 17210, subd. (b))*	REA Number Signature Expiration date Relevant experience (years)
Professional Engineer, State of California	Civil (including geotechnical and structural)	Department of Consumer Affairs Board for Professional Engineers and Land Surveyors http://www.dca.ca.gov/pels/l_lookup.htm		License Number Signature Seal or stamp Expiration date *(Bus. & Prof. Code § 6735)* Relevant experience (years)
	Electrical	Department of Consumer Affairs Board for Professional Engineers and Land Surveyors http://www.dca.ca.gov/pels/l_lookup.htm		License Number Signature Seal or stamp Expiration date *(Bus. & Prof. Code § 6735.3)* Relevant experience (years)
	Mechanical	Department of Consumer Affairs Board for Professional Engineers and Land Surveyors http://www.dca.ca.gov/pels/l_lookup.htm		License Number Signature Seal or stamp Expiration date *(Bus. & Prof. Code § 6735.4)* Relevant experience (years)
	Agricultural, Chemical, Control System, Corrosion, Fire Protection, Industrial, Manufacturing, Metallurgical, Nuclear, Petroleum, or Traffic	Department of Consumer Affairs Board for Professional Engineers and Land Surveyors http://www.dca.ca.gov/pels/l_lookup.htm		License Number Signature Seal or stamp (optional) Relevant experience (years)
Professional Geologist or Registered Certified Specialty Geologist, State of		Department of Consumer Affairs Board for Geologists and		License Number Signature

REGISTRATION	VERIFICATION OF REGISTRATION	EXPERIENCE FOR ALL REGISTRATIONS	PROOF OF QUALIFICATIONS TO BE INCLUDED IN DOCUMENTS SUBMITTED TO DTSC
California	Geophysicists http://www2.dca.ca.gov/pls/wllpub/wllqryna$lcev2.startup?p_qte_code=GEO&p_qte_pgm_code=5100		Seal or stamp Expiration date (Bus. & Prof. Code § 7835) Relevant experience (years)
Licensed Hazardous Substance Contractor with required education (degree from college, university, or postsecondary educational institution with 60 units in environmental, biological, chemical, physical, or soil science; engineering; geology; environmental or public health; or a directly related science field)	Department of Consumer Affairs Contractors State License Board http://www2.cslb.ca.gov/CSLB_LIBRARY/license+request.asp		Contractor's License Number HAZ (Hazardous Substance Removal) Certification Signature Expiration date Relevant experience (years)

CHAPTER 3 PHASE I ENVIRONMENTAL SITE ASSESSMENT (PHASE I)

3.1 INTRODUCTION

As a condition of receiving state funding for school site acquisition or new construction, Education Code section 17213.1, subdivision (a), requires that school districts conduct a comprehensive Phase I for each proposed school site.

A school district may choose to proceed directly to the PEA process without first submitting a Phase I for DTSC review (Ed. Code, § 17213.1, subd. (a)). Although a Phase I should still be conducted to identify all recognized environmental conditions associated with a proposed school site that should be evaluated in and used as background information for a PEA, it does not have to be submitted to DTSC for a separate review prior to initiating the PEA process. Proceeding directly to a PEA may be preferred if knowledge of the site indicates recognized environmental conditions are present.

The Phase I process includes a Phase I and may include a Phase I Addendum. Requirements for conducting Phase I and Phase I Addendum for proposed new or expanding school sites are identified in the following statutes and regulations:

- Education Code, section 17210, subdivision (g) provides the definition of a Phase I and requires that a Phase I be prepared in accordance with American Society for Testing and Materials (ASTM) Standard E1527 and any regulations promulgated by DTSC. Additionally, the ASTM standard should be expanded to identify and evaluate all sources of potential release or presence of hazardous material on proposed school sites.
- Education Code, section 17213.1, subdivisions (a)(1) through (4) describe Phase I requirements and process.
- California Code, of Regulations, title 22, section 69100 et seq., provides guidelines for conducting a Phase I and Phase I Addendum. These regulations allow evaluation of lead in soil from lead-based paint, organochlorine pesticides (OCPs) in soil from termiticide application, and/or polychlorinated biphenyls (PCBs) in soil from electrical transformers in a Phase I Addendum to streamline the environmental review process and thereby reduce site assessment costs for properties historically considered less likely to have contamination, such as residential properties.

A Phase I may include, but is not limited to, a review of public and private records of current and historical land uses, prior releases of a hazardous material, database searches, review of relevant files of federal, state, and local agencies, visual and other

surveys of the site, review of historical aerial photographs of the site and the area in its vicinity, interviews with current and previous owners and operators, and review of regulatory correspondence and environmental reports. In general, environmental sampling is not required or included in a Phase I. However, the regulations above allow limited sampling results to be included in a Phase I Addendum that can be submitted along with or after submittal of a Phase I.

A Phase I Addendum is a report containing results of sampling and analysis, limited to results of lead in soil from lead-based paint, OCPs in soil from termiticide application, and/or PCBs in soil from electrical transformers, for sites where these contaminants are the only potential release or presence of hazardous materials identified in the Phase I (Cal. Code Regs., tit. 22, § 69102, subsec. (f)).

This chapter is intended to complement the current ASTM standard and provide recommendations for supplemental areas to be evaluated in a Phase I conducted for a proposed new or expanding school site.

3.2 OBJECTIVE

The objective of a Phase I is to determine whether there has been or may have been a release of a hazardous material, or whether a naturally occurring hazardous material is present, based on reasonably available information about the property and the area in its vicinity (Ed. Code, § 17210, subd. (g); Cal. Code Regs., tit. 22, § 69102, subsec. (e); ASTM 2005).

The objective of a Phase I Addendum is to determine whether there has been a release of lead to soil from lead-based paint, organochlorine pesticides to soil from termiticide application, or polychlorinated biphenyls to soil from electrical transformers which would pose a threat to public health and the environment (Cal. Code Regs., tit. 22, § 69102, subsec. (f) and § 69109).

3.3 OVERSIGHT COST

Pursuant to Education Code section 17213.1, subdivision (a)(11) and section 17213.2, subdivision (h), the school district shall reimburse DTSC for all of its response costs. Phase I reports submitted to DTSC must be accompanied by a fee to cover DTSC oversight costs associated with the review of the Phase I. DTSC will refund the school district if Phase I costs are less than the fee amount and will invoice the school district for Phase I costs in excess of the fee amount.

3.4 PROCESS

The Phase I process is detailed on Figure 3-1. The process begins when a school district contracts with a qualified environmental assessor to prepare a Phase I (Ed. Code, § 17210, subd. (b) and § 17213.1, subd. (a)) without sampling data. If the Phase I recommends no further investigation, the school district submits the Phase I signed by the environmental assessor, with proof of the environmental assessor's qualifications and review fee, to DTSC for review and approval (Ed. Code, § 17213.1, subd. (a)(2)).

If lead from lead-based paint, OCPs from termiticide application, and/or PCBs from electrical transformers are identified as the only recognized environmental conditions, the school district may decide whether to submit the Phase I to DTSC for review and approval or conduct sampling and prepare a Phase I Addendum in pursuant to California Code of Regulations, title 22, section 69100 et seq.

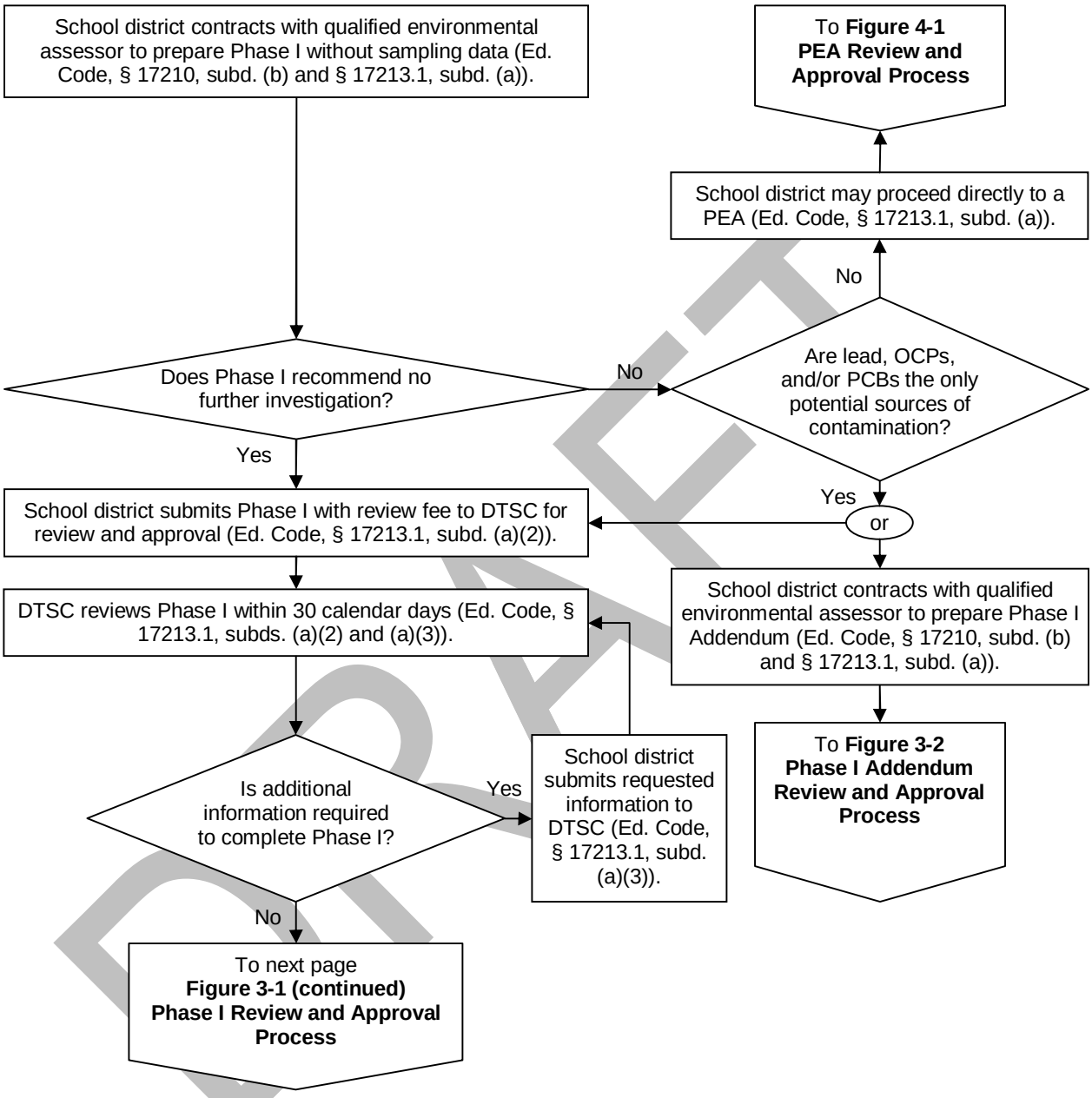
If the school district chooses to submit the Phase I to DTSC for review and approval, then submittal of the Phase I Addendum will follow. If the school district chooses to conduct sampling and prepare a Phase I Addendum, the Phase I Addendum can be submitted with the Phase I (Cal. Code Regs., § 69104, subd. (f)).

If a Phase I Addendum is submitted more than 180 days subsequent to the date the Phase I was conducted, or if a Phase I was conducted for a proposed school site more than 180 days prior to submittal to DTSC, information to verify current site conditions must be submitted to DTSC. Verification activities include, but are not limited to, the following (Cal. Code Regs., tit. 22, § 69104, subsec. (e)):

- Document changes to site conditions or boundaries
- Update interviews, searches, reviews, visual inspections, and declarations as described in ASTM Standard E1527

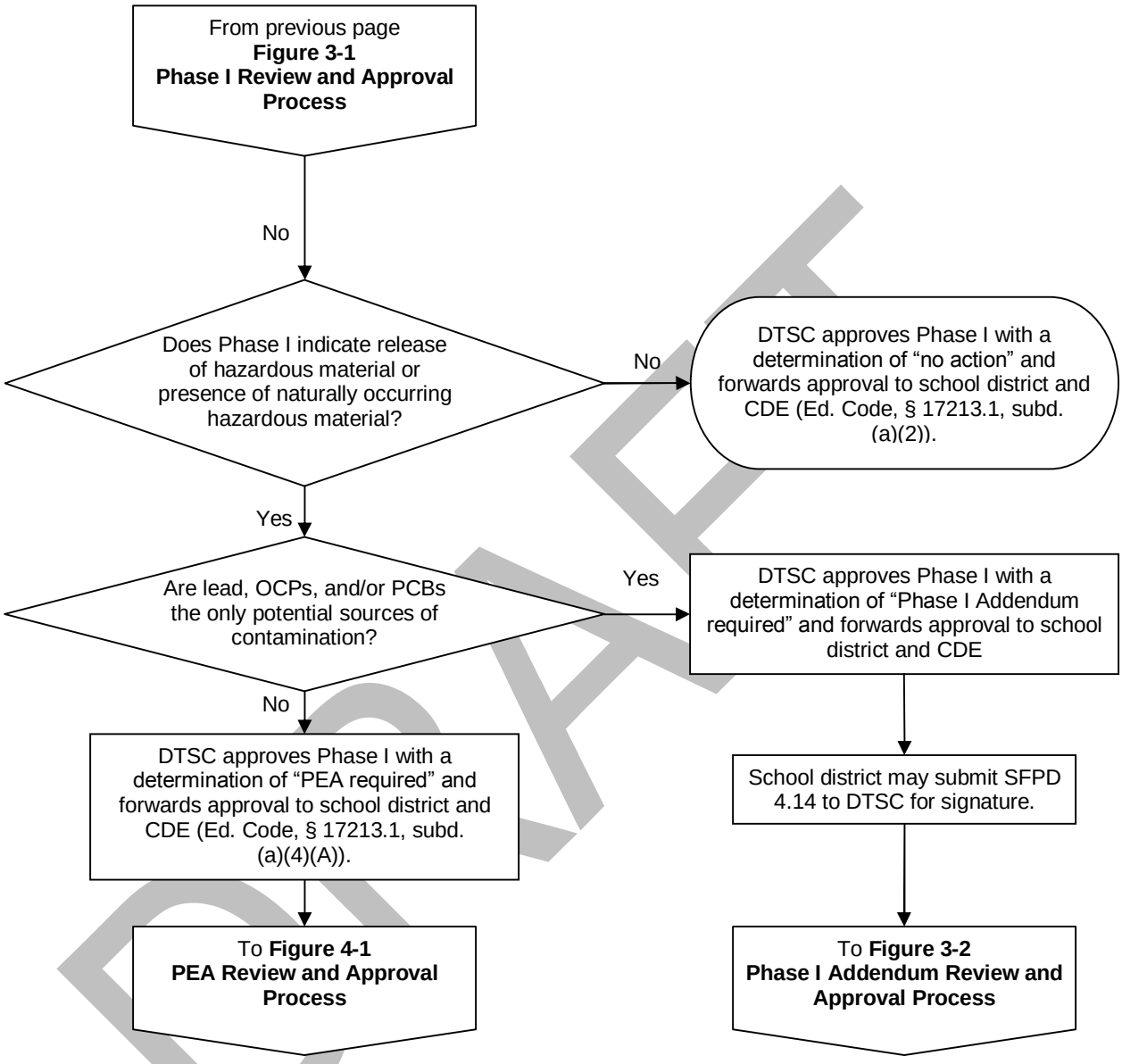
DTSC is required to review and approve the Phase I Report within 30 days of receipt of the report, proof of qualifications, and fee. If DTSC determines that the Phase I report is incomplete, DTSC may request additional information necessary to approve the Phase I from the school district. The school district may provide the requested information to DTSC by telephonic or electronic means. Within 30 days of receipt of the additional information, DTSC shall conduct its review and approval (Ed. Code, § 17213.1, subds. (a)(3) and (a)(4)(B)).

Figure 3-1
Phase I Review and Approval Process



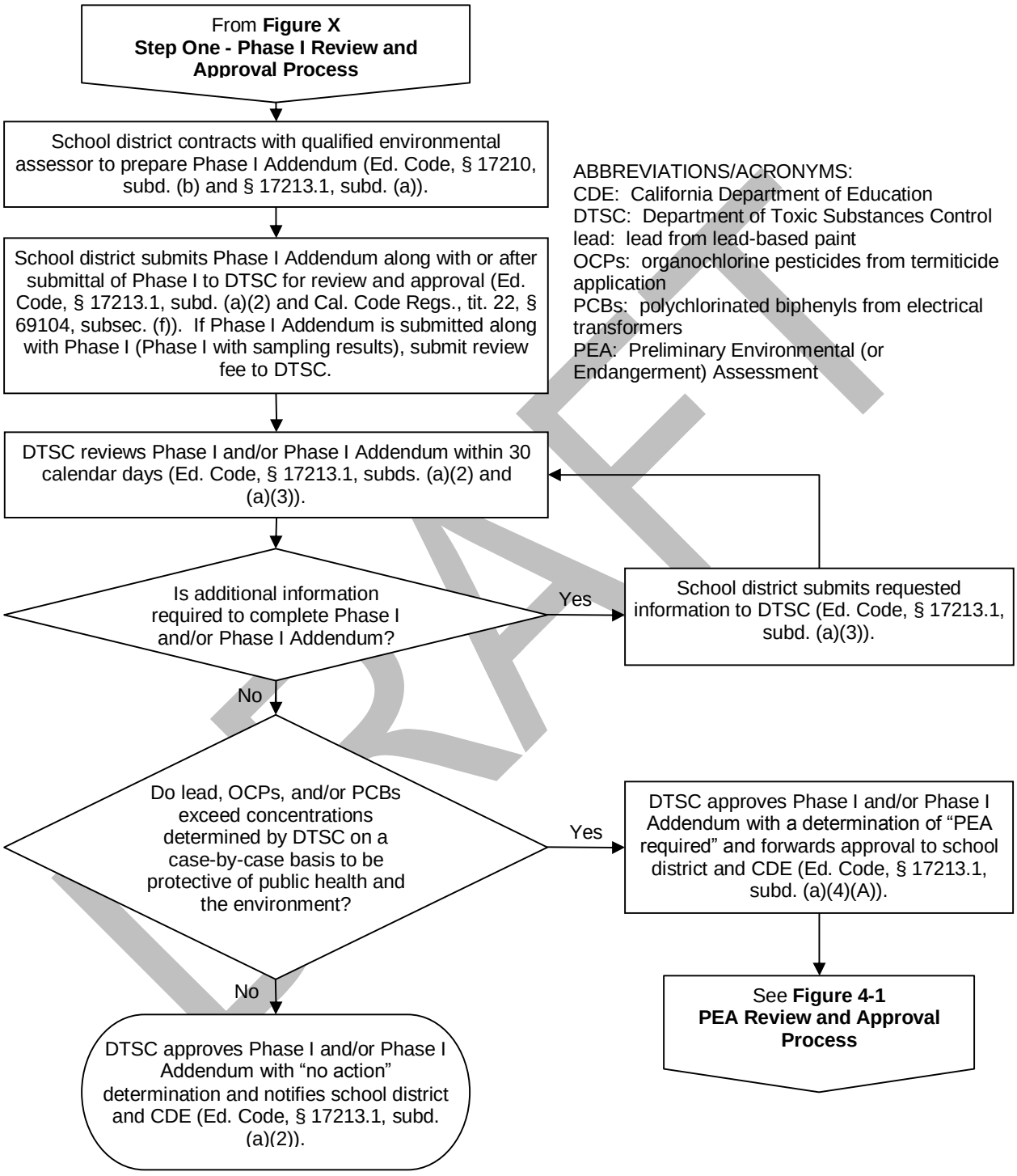
ABBREVIATIONS/ACRONYMS:
DTSC: Department of Toxic Substances Control
lead: lead from lead-based paint
OCPs: organochlorine pesticides from termiticide application
PCBs: polychlorinated biphenyls from electrical transformers
PEA: Preliminary Environmental (or Endangerment) Assessment

Figure 3-1 (continued)
Phase I Review and Approval Process



ABBREVIATIONS/ACRONYMS:
CDE: California Department of Education
DTSC: Department of Toxic Substances Control
lead: lead from lead-based paint
OCPs: organochlorine pesticides from termiticide application
PCBs: polychlorinated biphenyls from electrical transformers
PEA: Preliminary Environmental (or Endangerment) Assessment
SFPD: School Facilities Planning Division

Figure 3-2
Phase I Addendum Review and Approval Process



3.4.1 Phase I Report Sample

An annotated sample with subject matter headings and associated information for a Phase I is included in Appendix H.

The sample is based on ASTM Standard E 1527 augmented with information needed for proposed new or expanding school sites. The Phase I should reference or provide all supporting documentation to facilitate reconstruction of the assessment by another environmental assessor. Sources that revealed no findings should also be documented.

3.4.2 Phase I Addendum Sample

An annotated sample with subject matter headings and associated information for a Phase I Addendum is included in Appendix I. This sample is for a stand-alone document that should be used if a Phase I Addendum is submitted after a Phase I. If a Phase I Addendum is submitted along with the Phase I as an appendix, sections in the Phase I Addendum that repeat information in the Phase I sample (Appendix H) may be omitted. The sample is based on the format provided in *Fact Sheet #5: Proposed Regulations on Preparation of Phase I Environmental Site Assessments* (DTSC 2002a).

Requirements for sampling for lead from lead-based paint, OCPs from termiticide application, and/or PCBs from electrical transformers is provided in California Code of Regulations, title 22, sections 69105 (for lead), 69106 (for OCPs), and 69107 (for PCBs). Guidance is provided in the *Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers* (DTSC 2006a). The most recent version of this guidance document should be used and is available through links on the DTSC website, "Evaluating and Cleaning-Up School Sites," at <http://www.dtsc.ca.gov/Schools/index.cfm>. DTSC should be consulted for sites with deviations from the guidance referenced above. Based on specific characteristics of a site, DTSC may recommend submittal of a workplan prior to conducting sampling activities. If DTSC was not consulted for sites deviating from the guidance, DTSC may require additional information or sampling if deficiencies are found.

3.5 POSSIBLE DETERMINATIONS

A Phase I and/or Phase I Addendum may be submitted in a variety of ways:

- Phase I without sampling data
- Phase I Addendum submitted with or after Phase I

Based on the information provided in the report(s) submitted, DTSC will make a determination regarding the need for further action.

Although DTSC regulations (Cal. Code Regs., tit. 22, div. 4.5, ch. 51.5, art. 1) require the use of ASTM Standard E1527-05 which was developed concurrently with federal regulations for "all appropriate inquiries," DTSC approval of the Phase I pursuant to the Education Code (Ed. Code, § 17213.1, subd. (a)), does not constitute a determination that

"all appropriate inquiries" have been conducted within the meaning of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (42 U.S.C. § 9601(35)(B)). DTSC review of a Phase I is conducted solely to identify recognized environmental conditions at this site in accordance with requirements of the Education Code, and to determine whether further investigation is necessary prior to DTSC approval of this site for future school use.

3.5.1 Phase I without Sampling Data

Based on review of the Phase I report, DTSC will issue a determination of "no action," "Phase I Addendum required," or "PEA required."

3.5.1.1 NO ACTION

DTSC will issue a determination of "no action" if the Phase I demonstrates that neither a release of hazardous material nor the presence of a naturally occurring hazardous material was indicated at the site.

Pursuant to Education Code section 17213.2, subdivision (e), if a previously unidentified release or threatened release of a hazardous material or the presence of a naturally occurring hazardous material is discovered anytime during construction at the site, the district shall cease all construction activities at the site and notify DTSC. Additional assessment, investigation, or cleanup may be required. Activities to address environmental findings during school construction are included in Appendix F.

3.5.1.2 PHASE I ADDENDUM REQUIRED

DTSC will issue a determination of "Phase I Addendum required" if lead in soil from lead-based paint, OCPs in soil from termiticide application, and/or PCBs in soil from electrical transformers are the only potential sources of contamination at the site.

3.5.1.3 PEA REQUIRED

DTSC will issue a determination of "PEA required" if a PEA is needed to determine (1) if a release of hazardous material has occurred and, if so, the extent of the release; (2) if there is a threat of a release of hazardous materials; and/or (3) if a naturally occurring hazardous material is present.

3.5.2 Phase I Addendum Submitted With or After Phase I

Based on review of the Phase I Addendum report, DTSC will issue a determination of "no action" or "PEA required."

3.5.2.1 NO ACTION

DTSC will issue a determination of "no action" if the Phase I Addendum report demonstrates that (1) lead in soil from lead-based paint, OCPs in soil from termiticide application, and/or PCBs in soil from electrical transformers are the only potential sources of contamination at the site; and (2) concentrations of lead, OCPs, and/or PCBs in soil do not exceed concentrations determined by DTSC on a case-by-case basis to be protective of public health and the environment.

DTSC will review the Phase I Addendum to determine if the concentrations are protective of public health and the environment. However, screening values for lead, OCPs, and PCBs in soil from these specific sources is provided in the *Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers* (DTSC 2006a). The most recent version of this guidance document should be used and is available through links on the on the DTSC website, "Evaluating and Cleaning-Up School Sites," at <http://www.dtsc.ca.gov/Schools/index.cfm>. These screening values are for initial assessment only and should not be construed as required removal or remedial levels. The screening values are intended to assist school districts in making recommendations in the Phase I Addendum. However, these are general guidelines and DTSC will make a determination based on site-specific information.

Pursuant to Education Code section 17213.2, subdivision (e), if a previously unidentified release or threatened release of a hazardous material or the presence of a naturally occurring hazardous material is discovered anytime during construction at the site, the district shall cease all construction activities at the site and notify DTSC. Additional assessment, investigation, or cleanup may be required. Activities to address environmental findings during school construction are included in Appendix F.

3.5.2.2 PEA REQUIRED

DTSC will issue a determination of "PEA required" if a PEA is needed to determine (1) if a release of hazardous material has occurred and, if so, the extent of the release; (2) if there is a threat of a release of hazardous materials; and/or (3) if a naturally occurring hazardous material is present.

3.6 OPTIONS

3.6.1 Elect not to Pursue Acquisition or Construction

If a Phase I Addendum or PEA is required and the school district does not own the site, the school district may elect to conduct the investigation required or not pursue acquisition or construction of the site (Ed. Code, § 17213.1, subds. (a)(3) and (a)(4)(B)).

3.6.2 School Facilities Planning Division 4.14 Form

If lead in soil from lead-based paint, organochlorine pesticides in soil from termiticide application, and/or polychlorinated biphenyls in soil from electrical transformers, are the only potential release or presence of hazardous materials identified in the Phase I, a school district may submit California Department of Education, School Facilities Planning Division form 4.14 to DTSC for signature.

This form allows a school district to seek final site approval and/or final plan approval from California Department of Education with a DTSC-approved Phase I or PEA, prior to completing DTSC requirements for further investigation or cleanup of these contaminants.

Final site approval or final plan approval from California Department of Education allows school districts to seek full State Allocation Board site acquisition apportionment and/or new construction project apportionment, including the state share of costs based upon eligible actual or estimated cleanup costs (if any) known at the time of the application. By signing this form, the school district commits to complete all investigation and cleanup activities required by DTSC prior to grading affected areas of the project site. The school district also acknowledges that any related additional cleanup costs may be the full responsibility of the school district and would be subject to applicable funding adjustment limits and criteria. Pursuant to the Education Code, funding shall be rescinded if criteria to have funds released within 18 months of apportionment are not met.

School districts may complete the top portion of the form, and submit the form to DTSC, along with a copy of the DTSC Phase I determination letter, for completion of the lower portion of the form; DTSC will forward the completed form via facsimile and mail to CDE and the school district. California Department of Education will issue final approvals upon receipt of the completed form and when all other California Department of Education site or plan requirements have been met.

3.7 RECOMMENDED SUPPLEMENTAL EVALUATION AREAS

In addition to the contaminants and sources identified in ASTM Standard E 1527, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process* (ASTM 2005), the Phase I should identify and evaluate all sources for potential release or presence of hazardous material on proposed school sites (Cal Code Regs., § 69104, subsec. (d)). This section provides recommendations for the following supplemental areas to be evaluated in a Phase I:

1. Agricultural use
2. Debris or stockpiles
3. Fill material
4. Electrical transformers, oil-filled electrical equipment, or hydraulic systems
5. Government use or ownership
6. Grading activities
7. Hydrogen sulfide
8. Illegal drug manufacturing
9. Lead-based paint application
10. Metals and metalloids
11. Methane
12. Mines
13. Naturally-occurring asbestos
14. Naturally-occurring hazardous materials
15. Petroleum deposits or use
16. Radon
17. Railroad use or easements
18. Residential use
19. Surface drainage pathways
20. Termiticide application

21. Utility easements
22. Munitions and explosives of concern

3.7.1 Agricultural Use

Past agricultural practices have been shown to be the source of hazardous soil conditions, including dangerous levels of pesticide residuals and explosive levels of methane. DTSC recommends that the site be evaluated to identify current or historical agricultural use. The Phase I should provide detail regarding crops types grown, irrigation uses and types, and historical pesticide application practices. The Phase I should also provide a detailed description of historical use and supporting documentation, including interviews with or affidavits from operators, for the following:

- The types of historical agricultural use and pesticide application
- The potential presence of persistent pesticides, including:
  - Organochlorine pesticides (OCPs).
  - Arsenical herbicides.
- The presence, location and size of:
  - Agricultural production wells.
  - Electrical transformers and potential presence of PCBs.
  - Sumps, pits, ponds, lagoons, and potential presence of methane and pesticides.
  - Feedlot or dairy production waste ponds, and potential presence of methane.
  - Pesticide or herbicide mixing areas.
  - Cattle pesticide dip pits and potential presence of pesticides and polynuclear aromatic hydrocarbons (PAHs).
  - Burn areas and potential presence of PAHs, and chlorinated dibenzo-p-dioxins and chlorinated dibenzofurans (collectively referred to as dioxins).

Although the *Interim Guidance for Sampling Agricultural Properties (Third Revision)* (DTSC 2008) are intended to provide a uniform approach for evaluating former agricultural sites as part of the PEA, they provide information, such as recommended sources of information, a list of pesticides and herbicides of concern, and typical half-lives, that may be useful in conducting a Phase I. The most recent versions of these interim guidance documents for agricultural sites are available through links on the DTSC website, "Evaluating and Cleaning-Up School Sites," at <http://www.dtsc.ca.gov/Schools/index.cfm>.

3.7.2 Debris or Stockpiles

Debris may contain hazardous materials and DTSC recommends that the Phase I identify the presence and characteristics of such features as:

- Burn dumps
- Construction debris
- Demolition debris
- Illegal dumping
- Incinerators

- Tires

3.7.3 Fill Material

Imported fill material may introduce contamination to the site. DTSC recommends evaluating the site for evidence of fill material. Available information regarding the source and characterization of any fill material should be included in the Phase I. "Clean fill" may not necessarily be non-hazardous. So-called "clean fill" may contain hazardous materials including PAHs, heavy metals, asbestos, pesticides, PCBs, petroleum, or volatile or semi-volatile organic carbon compounds. Special attention should be paid to fill sources, including but not limited to, the following:

- Mine waste for presence of heavy metals or asbestos.
- Fill material that originates from an off-site or unknown source. Off-site fill sources should be identified in the report.
- Fill material with organic material that may generate methane. Refer to section 3.7.11 for methane.

If a proposed school site is known to need off-site fill, DTSC recommends that the Phase I identify the potential fill source, if possible. The *Informational Advisory, Clean Imported Fill Material* (DTSC 2001b) should be consulted when fill material is known or is expected to be used at a proposed school site. The most recent version of this advisory is available through links on the DTSC website, "Evaluating and Cleaning-Up School Sites," at <http:// www.dtsc.ca.gov/Schools/index.cfm>.

3.7.4 Electrical Transformers, Oil-Filled Electrical Equipment, or Hydraulic Systems

Polychlorinated biphenyls (PCBs) are man-made chemicals commonly used in the past as coolants and lubricants. PCBs are found as a clear to yellow, heavy oily liquid or waxy solid. PCBs were frequently used as insulation in electrical equipment because of their stablility, low water solubility, high boiling point, low flammability, and low electrical conductivity (ATSDR 2001, DTSC 2003, and U.S. EPA 2004a). PCBs were produced in the United States from approximately 1929 to 1977. Production of PCBs was banned in the United States by the Toxic Substances Control Act (TSCA) in 1978 due to evidence of accumulation in the environment and link to harmful health effects (DTSC 2003). U.S. EPA considers PCBs to be probable human carcinogens (U.S. EPA 2004c) and they are listed as carcinogens by the State of California (OEHHA 2005). PCBs may have serious effects on the immune, reproductive, nervous, and endocrine systems (U.S. EPA 2004c).

Prior to 1978, PCBs were often used in the manufacture of transformers, capacitors, oil-filled electrical equipment (such as electrical switches or ballasts), and hydraulic systems. The age of the equipment does not necessarily indicate the presence or absence of impacts to soil from PCBs, as releases of PCBs from previous equipment may have occurred before its replacement. Once released to the environment, PCBs bind to soil particles and are very persistent.

DTSC recommends that the site be evaluated for the presence PCBs. Any PCB management or abatement programs should be identified and discussed. A Phase I should, at a minimum, identify the past or current presence of:

- Electrical transformers
- Oil-filled electrical equipment (such as electrical switches or ballasts)
- Hydraulic systems

A focused investigation for PCBs in soil from electrical transformers may be included in a Phase I Addendum. Soil sampling is not necessary for transformers installed for the first time on or after January 1, 1979. Soil sampling should be conducted for any historical (removed or replaced by a newer transformer) or current transformers installed before January 1, 1979.

Guidance for sampling for PCBs in soil from electrical transformers is provided in the *Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers* (DTSC 2006a). The most recent version of this guidance document should be used and is available through links on the DTSC website, "Evaluating and Cleaning-Up School Sites," at <http:// www.dtsc.ca.gov/Schools/index.cfm>. In general, submittal of a work plan prior to conducting field activities is not necessary if strategies in this guidance and California Code of Regulations, title 22, section 69107 (for PCBs), are followed. However, submittal of a work plan for DTSC approval is recommended for sites that deviate from the strategies described in the interim guidance or regulations.

3.7.5 Government Use or Ownership

Physical and chemical hazards may be present on sites owned or used by federal, state, and local governmental entities. DTSC recommends that the Phase I identify any current or former government ownership or use of the site and clearly identify the specific land use. Any previously completed investigations should be summarized or included in the Phase I. The Phase I should evaluate government ownership or use, including but not limited to:

- Formerly used defense sites.
- Potential for presence of ordnance and explosives or unexploded ordnance.
- Ownership or use by local, state, or federal law enforcement agencies.
- Ownership or use by United States Department of Defense or any of the armed forces (Air Force, Army, Coast Guard, Marine Corps, or Navy).
- Ownership or use by the United States Department of Energy.
- Ownership or use by civilian federal agencies such as Department of the Interior, Commerce, Agriculture, Veterans Affairs, Transportation, and United States Postal Service.

Activities at government facilities that utilize hazardous materials may include, but are not limited to (U.S. EPA 1996):

- Electroplating
- Explosive manufacturing, storage, and disposal
- Firefighting training areas
- Fuel storage and distribution
- Hospital operations
- Printing operations
- Residential areas
- Vehicle maintenance
- Warehousing
- Wastewater treatment

3.7.6 Grading Activities

Grading activities may cause spread of contamination and result in methane generation if organic material was present. The Phase I should discuss any historical or current grading activities conducted on site, including the areas affected (horizontal and vertical extent). Refer to section 3.7.11 for methane.

3.7.7 Hydrogen Sulfide

Hydrogen sulfide is a colorless gas with a strong odor of rotten eggs; however it may cause the sense of smell to be fatigued and as a result, smell cannot be relied upon to warn of the continuous presence of hydrogen sulfide. It poses an immediate fire and explosion hazard when mixed with air, is heavier than air, and can displace air in confined spaces. Hydrogen sulfide is a respiratory irritant and exposure to high concentrations may result in loss of consciousness, respiratory paralysis, seizure, and death.

Hydrogen sulfide is produced naturally by decaying organic matter and is released from sewage sludge, liquid manure, sulfur hot springs, and natural gas. It is a byproduct of many industrial processes including petroleum refining, tanning, mining, wood pulp processing, rayon manufacturing, sugar beet processing, and hot asphalt paving. The Phase I should discuss any potential sources of hydrogen sulfide at the site.

3.7.8 Illegal Drug Manufacturing

Hazardous materials are used to manufacture illegal drugs and may be released to the environment. DTSC recommends that the Phase I assess whether the property has been identified as a location of previous law enforcement or DTSC cleanup activities for illegal drug laboratories. To do this, the environmental assessor may contact DTSC's Emergency Response Unit, and request a database search for the subject property. For properties not listed in DTSC's database, local law enforcement and county environmental health databases should be searched. DTSC's Emergency Response Unit may be reached at (916) 255-6504 during normal business hours.

3.7.9 Lead-Based Paint Application

Lead can impair the nervous system, affecting hearing, vision, and muscle control. Lead is also toxic to the kidneys, blood, and heart. Exposure of children to lead may

cause irreversible learning deficits, mental retardation, and delayed neurological and physical development (ATSDR 1999).

In response to the potential harmful effects from lead, the United States Consumer Product Safety Commission banned the application of paint containing more than 0.06 percent (600 parts per million) lead by weight on residential structures in 1978 (DHS 1998, CDC 1991, U.S. CPSC 2005, and U.S. EPA 2004b). However, surplus lead-based paint was still used for more than a decade later and lead-containing paint (paint with detectable amounts of lead) is still available for industrial, military, and marine usage (DHS 1998 and CDC 1991).

Considering the 1978 ban, California Code of Regulations, title 17, section 35043 defines presumed lead-based paint as "paint or surface coating affixed to a component in or on a structure, excluding paint or surface coating affixed to a component in or on a residential dwelling constructed on or after January 1, 1979, or a school constructed on or after January 1, 1993."

Based on this information, structures with paint or surface coatings, with the exception of residential structures constructed on or after January 1, 1979 or schools constructed on or after January 1, 1993, may have surfaces coated with lead-based paint. As a result, any commercial or industrial structures, regardless of construction date, may have surfaces coated with lead-based paint.

Abatement, mitigation, and management of lead-based paint on building surfaces are currently regulated by several federal, state, and local agencies. However, evaluation of potential lead contamination in soil is part of the environmental review process for school sites under DTSC oversight.

Weathering, scraping, chipping, and abrasion may cause lead to be released to and accumulated in soil around these structures. If the site historically included or currently includes structures with potential lead-based paint, soil sampling for lead in soil should be conducted. A focused investigation for lead in soil from lead-based paint may be included in a Phase I Addendum.

Guidance for sampling for lead in soil from lead-based paint is provided in the *Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers* (DTSC 2006a). The most recent version of this guidance document should be used and is available through links on the DTSC website, "Evaluating and Cleaning-Up School Sites," at <http://www.dtsc.ca.gov/Schools/index.cfm>. In general, submittal of a work plan prior to conducting field activities is not necessary if strategies in this guidance and California Code of Regulations, title 22, sections 69105 (for lead) are followed. However, submittal of a work plan for DTSC approval is recommended for sites that deviate from the strategies described in the interim guidance or regulations.

3.7.10 Metals and Metalloids

Metals and metalloids are naturally occurring elements/compounds found throughout the environment. Elevated levels may adversely impact human health.

3.7.10.1 ARSENIC

Arsenic, a naturally occurring element, is found throughout the environment; it is released into the air by volcanoes, the weathering of arsenic-containing minerals and ores, and by commercial or industrial processes. Elevated levels of inorganic arsenic may be present in soil, either from natural mineral deposits or contamination from human activities, which may lead to exposures. The most frequent uses for inorganic arsenic include wood preservation and pesticide applications.

Acute (short-term) high-level inhalation exposure to arsenic dust or fumes has resulted in gastrointestinal effects (nausea, diarrhea, abdominal pain); central and peripheral nervous system disorders have occurred in workers acutely exposed to inorganic arsenic. Chronic (long-term) inhalation exposure to inorganic arsenic in humans is associated with irritation of the skin and mucous membranes. Chronic oral exposure has resulted in gastrointestinal effects, anemia, peripheral neuropathy, skin lesions, hyperpigmentation, and liver or kidney damage in humans. Inorganic arsenic exposure in humans, by the inhalation route, has been shown to be strongly associated with lung cancer, while ingestion of inorganic arsenic in humans has been linked to a form of skin cancer and also to bladder, liver, and lung cancer. EPA has classified inorganic arsenic as a Group A, human carcinogen.

DTSC recommends that the Phase I include information available regarding all potential uses of arsenic, including type and application, of pesticides at a proposed school site as well as a determination of the sites historic use as a wood treatment facility. In addition, the Phase I should reference known concentrations of local or regional naturally occurring arsenic, such as regional background databases.

3.7.10.2 MERCURY

Mercury is a naturally occurring element that is found in air, water and soil. It exists in several forms: elemental or metallic mercury, inorganic mercury compounds, and organic mercury compounds. Elemental or metallic mercury is a shiny, silver-white metal and is liquid at room temperature. It is used in thermometers, fluorescent light bulbs and some electrical switches. When dropped, elemental mercury breaks into smaller droplets which can go through small cracks or become strongly attached to certain materials. At room temperature, exposed elemental mercury can vaporize to become an invisible, odorless toxic gas. Inorganic mercury compounds are in the form of mercury salts and are generally white powder or crystals, with the exception of mercuric sulfide (cinnabar) which is red. Inorganic mercury compounds have been included in products such as fungicides, antiseptics or disinfectants. Organic mercury compounds, such as methylmercury, are formed when mercury combines with carbon. Microscopic organisms convert inorganic mercury into methylmercury, which is the most common organic mercury compound found in the environment. Methylmercury accumulates up the food chain.

Mercury exposure at high levels can harm the brain, heart, kidneys, lungs, and immune system of people of all ages.

DTSC recommends that the Phase I include information available regarding all potential site uses of mercury. The Phase I should reference known concentrations of local or regional naturally occurring mercury, such as regional background databases.

3.7.11 Methane

Methane is lighter than air, colorless, odorless, non-carcinogenic, and flammable. Methane is considered hazardous when it accumulates beneath buildings and hardscape and can result in indoor space migration with possible health outcomes indoors, asphyxiation, combustion, and explosion. Methane occurs as natural gas in coal mines, oil and gas fields, and other geological formations; as a byproduct of petroleum refining; and as a product of decomposition of organic mater in natural settings (e.g. wetlands), and man-mad settings (e.g. landfills, engineered fill, hydrocarbon waste, food processing facilities, sewer lines, septic systems, dairies, and concentrated animal feed lots).

There are two primary mechanisms by which methane is produced. Thermogenic methane is generated at depth under elevated pressure during and following the formation of petroleum (e.g. in oil fields). Biogenic methane is formed at relative shallow depths by the bacteriological decomposition of organic matter in the soil (e.g. engineered fill, landfills). Biogenic methane is rarely found at a pressure in excess of a few inches of water.

The primary mechanisms for methane migration in the subsurface are pressure driven flow and diffusion. Methane will migrate from areas where it is present at higher pressures or concentrations to areas where it is present at lower pressures or concentrations. Since methane is lighter than air, it has a tendency to rise from depth to the ground surface where it dissipates into the atmosphere. Where a relatively impermeable barrier, such as a concrete slab, is present at the ground surface, the potential exists for methane to accumulate beneath that barrier.

The Phase I should discuss any potential sources of methane at the site. Additional information regarding methane is available in the *Advisory on Methane Assessment and Common Remedies at School Sites* (DTSC 2005a). The most recent version of this guidance document should be used and is available through links on the DTSC School website, “Evaluating and Cleaning-Up School Sites,” at <http://www.dtsc.ca.gov/Schools/index.cfm>.

3.7.12 Mines

Abandoned or inactive mines and associated mine waste may pose both physical and chemical hazards. DTSC recommends that the site be evaluated in the Phase I to identify the presence of abandoned or inactive mines or mine waste. The evaluation should be conducted using the initial steps for conducting an abandoned mine lands (AML) investigation described in Chapter 4 of the DTSC *Abandoned Mine Lands Preliminary Assessment Handbook*, dated January 1998 (AML Handbook). The AML

Handbook covers background information requirements similar to a Phase I and investigation requirements similar to a PEA for sites with an abandoned or inactive mine or associated mine waste. Accordingly, the AML Handbook should also be used when conducting a PEA for such sites.

The AML Handbook provides non-technical information explaining the concerns associated with abandoned and inactive mines or mine wastes, and technical information to aid environmental assessors who may need to develop sampling plans for these types of sites. Abandoned and inactive mines or mine wastes may have associated heavy metal contamination or mineral hazards and should be evaluated for presence of toxic, corrosive, radioactive, or otherwise noxious metals, chemicals or materials or unusual environmental conditions resulting from past mining, milling, or smelting operations. The following are some of the chemicals that may be associated with a mine or presence of mine waste:

- Metals, such as chromium, copper, lead, mercury, nickel.
- Metalloids, such as arsenic, selenium.
- Minerals, such as asbestos.

3.7.13 Naturally-Occurring Asbestos

Asbestos is a known human carcinogen (U.S. EPA 2001b) that may be present naturally and in manmade material, such as building materials and piping. DTSC recommends that the site be evaluated for the presence of and naturally-occurring asbestos (NOA).

NOA is more likely to be encountered in, and immediately adjacent to, areas of ultramafic rocks. Ultramafic rocks may be partially or completely altered to serpentinite, a type of metamorphic rock. Sometimes the metamorphic conditions are right for the formation of chrysotile asbestos or amphibole asbestos in bodies of ultramafic rock, or along their boundaries. Proposed school sites near areas of ultramafic rock should be evaluated by a Professional Geologist registered in California for the potential presence of NOA. If the site has the potential for having NOA, the geologist should perform a visual assessment of the proposed school site as well as review existing geologic surveys to determine if surficial rocks or geologic formations are present which could contain asbestos.

The *Interim Guidance for Naturally Occurring Asbestos (NOA) at School Sites* (DTSC 2004) provides guidance for identification, investigation, mitigation, and long-term monitoring and maintenance for NOA sites. The most recent version of this guidance document for NOA is available through links on the DTSC website, “Evaluating and Cleaning-Up School Sites,” at <http://www.dtsc.ca.gov/Schools/index.cfm>. For most sites, the presence of NOA will require a PEA.

DTSC recommends that the Phase I, at a minimum, identify the following conditions:

- Presence of geologic units or features that potentially contain NOA.

- Identification of areas that could have received NOA from erosion, run-off, or other forces that could move soil or rock containing asbestos away from geologic units containing NOA.
- Import of fill soils or surfacing materials potentially containing NOA. The use of asbestos containing fill material should be avoided. If the site is located in an area near ultramafic rock sources, the site should be evaluated for the potential to have serpentine rock used as road bed or fill material.
- Location of the site within 10 miles of a known NOA geologic formation or is in a down-slope drainage area of a geologic formation that could potentially contain NOA.

i. Naturally-Occurring Hazardous Materials

Hazardous materials can occur naturally and DTSC recommends that the site be evaluated for the potential presence of high concentrations of naturally-occurring hazardous materials such as heavy metals (e.g., chromium, mercury, nickel) metalloids (e.g., arsenic, selenium), gases (e.g., methane, hydrogen sulfide), and radioactive elements (e.g., radon gas). The Phase I should reference known concentrations of local or regional naturally occurring hazardous materials, such as regional background databases.

3.7.14 Petroleum Deposits or Use

Petroleum and petroleum products are mixtures containing hydrocarbon compounds, non-hydrocarbon compounds (compounds containing sulfur, nitrogen, or oxygen with carbon and hydrogen), and metallic compounds (TPHCWG 1998). They may also include blending agents and additives such as methyl tertiary butyl ether (MTBE) for oxygenation and ethylene dibromide (EDB) for lead scavenging (TPHCWG 1998). The site should be evaluated for the presence of petroleum deposits. The Department of Conservation District Office, of the Division of Oil and Gas should be contacted for available information. At a minimum, the property should be evaluated for the potential for presence of:

- Oil fields
- Oil and gas wells
- Oil production area
- Natural gas production
- Oil or natural gas reserves
- Storage tanks and dispensing systems
- Methane (Refer to section 3.7.11 for methane)
- Hydrogen sulfide (H_2S) (Refer to section 3.7.7 for hydrogen sulfide)

The Phase I should also reference any geo-technical or geophysical hazard reports, and discuss whether or not trenching has been done to identify faults that might allow petroleum, oil, or gas seepage.

3.7.15 Radon

Radon is a colorless, odorless, and toxic radioactive gas with a half-life of 3.8 days. Radon Is formed from the radioactive decay ofradium from rocks and soils containing elevated levels of uranium. Although radon disintegrateswith the emission of an alpha particle, several additional alpha, beat, and gammas are then emitted over the next few minutes as the resulting unstable isotopes disintegrate. Other harmful effects associated with chronic exposure to radon include emphysema, pulmonary fibrosis, chronic interstitial pneumonia, silicosis, and respiratory lesions.

The U.S. EPA evaluated the radon potential in the United States and developed maps that divide each county into one of three zones (U.S. EPA 2008a):

- **Zone 1** counties have a predicted average indoor radon screening level greater than 4 pico curies per liter (pCi/L).
- **Zone 2** counties have a predicted average indoor radon screening level between 2 and 4 pCi/L.
- **Zone 3** counties have a predicted average indoor radon screening level less than 2 pCi/L.

Based on a national residential radon survey completed in 1991, the average indoor radon level is 1.3 pCi/L in the United States. The average outdoor level is about 0.4 pCi/L.

Current versions of the maps are available on the U.S. EPA website, "EPA Map of Radon Zones," at <http://www.epa.gov/radon/zonemap.html>. DTSC recommends that the Phase I identify the applicable zone of radon potential supplemented with available local information, such as known local or regional radon gas databases.

If a proposed school is located in a county identified as U.S. EPA Radon Zone 1 or in an area identified as significant for radon based on other local or regional information, radon should be identified as a recognized environmental condition to be evaluated further.

3.7.16 Railroad Use or Easements

Releases of hazardous materials in the rail transportation industry may result from operations, accidents, leaks, or spills. The Phase I should include any reports of accidents, leaks, releases, or spills associated with a railroad. Operations in the rail transportation industry that utilize hazardous materials may include, but are not limited to, the following (U.S. EPA 1997b):

- Rail car refurbishing and maintenance, including cleaning, stripping, painting, and brake and wheel repair.
- Locomotive maintenance, including cleaning, hydraulic system repair, fluid disposal, spent battery management, and brake and wheel repair.
- Transportation operations, including fueling, hazardous material transport, and fluid releases.

- Track maintenance, including application of pesticides, such as arsenical herbicides, and wood preservatives.

3.7.17 Residential Use

Certain activities associated with residential use of a property may result in the release of hazardous materials. DTSC recommends that the Phase I evaluate the potential for issues, including, but not limited to, the following:

- Lead-based paint – Refer to section 3.7.9 for lead-based paint application.
- Non-residential use – The site should be evaluated for the presence or evidence of non-residential use of structures, such as garages or outbuildings, that may have resulted in a release of hazardous materials. Hazardous materials may be associated with activities such as vehicle maintenance, painting, and pesticide storage.
- Septic systems – The site should be evaluated for the presence of cesspools, dry wells, leach fields, septic systems, settling ponds, and sumps. In particular, these systems should be evaluated for evidence of non-residential activities, which may have resulted in the disposal of hazardous materials from activities such as automobile maintenance or painting.
- Termiticide application – Refer to section 3.7.20 for termiticide application.
- Storage Tanks – The site should be evaluated for above and underground storage tanks that may have been used to store heating oil, kerosene, or other fuels.
- Electrical transformers – Refer to section 3.7.4 for electrical transformers.

3.7.18 Surface Drainage Pathways

An understanding of surface drainage pathways is necessary to evaluate the fate and transport of released or naturally-occurring hazardous materials. The Phase I should include a description and graphical representation of the surface drainage pathways at the site. This information will help direct sampling strategies, if necessary.

3.7.19 Termiticide Application

Organochlorine pesticides (OCPs) were commonly used as insecticides for termite control around structures. These OCPs included chlordane, lindane, heptachlor and aldrin, which readily converts to dieldrin in the environment.

OCPs were applied surficially to soil surrounding foundations and injected into the soil in an effort to isolate wood structures from termite nests (Ebeling 1975). Chlordane was used in the United States from 1948 until 1988, when it was banned by U.S. EPA. Because of evidence of human exposure and accumulation in body fat, as well as persistence in the environment and effects on wildlife, U.S. EPA prohibited the use of chlordane in 1988 to control termites around homes and structures. It is estimated that chlordane was applied to over 30 million homes in the United States, often at concentrations far higher than those recommended by the manufacturer because of homeowner application (Kilburn and Thornton 1995). Chlordane is listed as one of the twelve persistent organic pollutants by U.S. EPA based on its resistance to chemical

and biological degradation. When applied to soil around structures, chlordane adsorbs to organic matter and clay particles and slowly volatilizes into the atmosphere. The other OCPs which were also used as termiticides have also been banned by the U.S. EPA.

Chlordane is considered a Class B2 carcinogen by U.S. EPA (U.S. EPA 1997a, 2002a), and is listed as a carcinogen by the State of California (OEHHA 2005). Chronic exposure of people to chlordane may also result in adverse effects on the nervous, respiratory, and cardiovascular systems, as well as the liver, blood, and lung. The other OCPs used as termiticides are also considered by both U.S. EPA and the State of California to be possible carcinogens.

Widespread application of chlordane and other OCPs is known to have occurred around structures in various regions (Colorado, Florida, Louisiana, Massachusetts, New Jersey, and Texas) throughout the United States. However, due to the lack of data on pesticide residues at residential properties in California and the prevalence of termites throughout the state (Ebeling 1975 and UC 2001), DTSC conducted an investigation of three proposed school sites with residential structures to evaluate the presence and prevalence of chlordane and other OCPs as a result of termiticide application. The results of this study are presented in the report, *Residential Pesticide Study, Final Report* (DTSC 2006b).

The results of this study indicate that it is likely that significant concentrations of OCP residues may exist around structures with wood components built prior to January 1, 1989 and should be evaluated at school sites. A focused investigation for OCPs in soil from termiticide application may be included in a Phase I Addendum.

Guidance for sampling for OCPs in soil from termiticide application is provided in the *Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers* (DTSC 2006a). The most recent version of this guidance document should be used and is available through links on the DTSC DTSC website, “Evaluating and Cleaning-Up School Sites,” at <http://www.dtsc.ca.gov/Schools/index.cfm>. In general, submittal of a work plan prior to conducting field activities is not necessary if strategies in this guidance and California Code of Regulations, title 22, sections 69106 (for OCPs) are followed. However, submittal of a work plan for DTSC approval is recommended for sites that deviate from the strategies described in the interim guidance or regulations.

3.7.20 Utility Easements

DTSC recommends that the Phase I identify current or former easements which may have associated hazardous materials. Easements for utilities such as pipelines for petroleum, natural gas, oil, and sewer should be evaluated for potential leaks.

3.7.21 Munitions and Explosives of Concern

California has numerous closed military facilities or facilities currently in the process of closure. Development of these former facilities poses the possiblility of exposure to

munitions and explosives of concern and unexploded ordnance. DTSC recommends that the Phase I include a search of Department of Defense database and land use records (Formerly Used Defense Sites, Department of the Army, Department of the Air Force, Department of the Navy, or Department of Defense) to determine the potential for the site to contain munitions and explosives of concern and unexploded ordnance.

3.8 AREAS NOT ADDRESSED BY DTSC

Since DTSC authority for school sites is limited to releases, threatened releases, or presence of hazardous material, some recognized environmental concerns identified during a Phase I may not be subject to DTSC oversight.

Hazardous materials associated with building materials are not subject to DTSC authority if there has not been a release or threatened release to the environment.

3.8.1 Building Materials

The following hazardous materials may be associated with building materials.

3.8.1.1 ASBESTOS

Structures constructed before 1976 may contain asbestos-containing material (ACM), also references as asbestos-containing building material (ACBM). If structures on site are known or suspected to have ACM, associated surveys, management programs, or records certifying structures have undergone survey and abatement, should be referenced in the report. ACM should be mitigated, managed, or removed in accordance with federal, state, and local requirements.

3.8.1.2 LEAD-BASED PAINT

Structures with paint or surface coatings, with the exception of residential structures constructed on or after January 1, 1979 or schools constructed on or after January 1, 1993, may have surfaces coated with lead-based paint. As a result, any commercial or industrial structures, regardless of construction date, may have surfaces coated with lead-based paint.

Although evaluation of potential lead contamination in soil from lead-based paint is part of the environmental review process for school sites under DTSC oversight (Refer to section 3.7.9 for lead-based paint application), lead-based paint on building surfaces is currently regulated by several federal, state, and local agencies. As a result, lead-based paint on building surfaces should be abated, mitigated, and managed in accordance with federal, state, and local requirements.

CHAPTER 4 PRELIMINARY ENVIRONMENTAL ASSESSMENT (PEA)

4.1 INTRODUCTION

A PEA is required DTSC issued a determination of "PEA required "for the Phase I and/or Phase I Addendum and the school district owns the site or if the school district does not own the site and elects to pursue acquisition or construction. Additionally, a school district may choose to proceed directly to the PEA process without first submitting a Phase I for DTSC review (Ed. Code, § 17213.1, subd. (a)). Proceeding directly to a PEA may be preferred if knowledge of the site indicates recognized environmental conditions are present. However, a Phase I should still be conducted to identify recognized environmental conditions associated with a proposed school site that should be evaluated in and used as background information for a PEA.

The PEA process includes a PEA Technical Memorandum or PEA Workplan, and PEA Report. Requirements for conducting a PEA for proposed new or expanding school sites are identified in the following statutes and regulations:

- Education Code, section 17210, subdivision (h) provides the definition of a PEA and requires that a PEA be conducted in a manner that complies with the *Preliminary Endangerment Assessment: Guidance Manual* (DTSC 1994), including any amendments determine by DTSC to be appropriate to address issues unique to school sites.
- Education Code, section 17213.1, subdivisions (a)(4) through (6) describe PEA requirements and process.

A PEA includes sampling and analysis to make a preliminary determination of the type and extent of hazardous material contamination, and a preliminary evaluation of the risks that hazardous material contamination may pose to children's health, public health, or the environment (Ed. Code, § 17210, subd. (h)).

This chapter is intended to complement the *Preliminary Endangerment Assessment: Guidance Manual* (DTSC 1994) and provide guidelines to address issues unique to a PEA conducted for a proposed new or expanding school site. A document that fulfills the requirements of a Preliminary Endangerment Assessment may be titled, "Preliminary Environmental Assessment" (Ed. Code, § 17213.1, subd. (a)(5)), so the terms are used interchangeably.

4.2 OBJECTIVE

The objectives of a PEA are to determine whether current or past hazardous material management practices or waste management practices have resulted in a release or threatened release of hazardous materials, or whether naturally occurring hazardous

materials are present, which pose a threat to children's health, children's learning abilities, public health or the environment (Ed. Code, § 17210, subd (h)). Other objectives may include the following:

- Determine if an interim action is required to address an immediate threat to public health and the environment.
- Determine if the district plans to proceed with site acquisition.
- Provide for informational needs of the community.

4.3 OVERSIGHT COST

Oversight costs associated with the PEA process are recoverable by DTSC through a cost recovery agreement, an Environmental Oversight Agreement, with the school district. Oversight costs vary according to site size and complexity of potential environmental issues based on current and historical site activities. The DTSC PEA oversight team typically consists of a project manager, a geologist, a toxicologist, and some oversight from DTSC management. Hourly rates for staff are revised annually and include indirect labor charges. A breakdown of these costs is provided in the Environmental Oversight Agreement and therefore the school district has the opportunity to review costs prior to signing the Environmental Oversight Agreement. DTSC requests payment of 50 percent of estimated costs in advance, due within ten days of agreement execution (date of DTSC signature), and held in an account maintained by DTSC's Cost Recovery Unit. DTSC provides school districts with quarterly invoices for each project which contain a detailed accounting and supporting documentation of all expenditures during the previous quarter. After the advance has been expended, bills are due and payable within 60 days of DTSC's billing.

The final costs for oversight depend on the number of hours expended by DTSC staff. Calculation of charges may vary depending on the number of work hours per month. Fee amounts are adjusted annually to reflect increases or decreases in the cost-of-living, as measured by the Consumer Price Index, issued by the Department of Labor or a successor agency of the United States Government. In case the account has a credit balance at the close of the project, DTSC's Cost Recovery Unit refunds the amount pending processing by the Office of the State Controller.

Additional information on cost recovery and oversight agreements is provided in Appendix D.

4.4 PROCESS

The PEA process is detailed on Figure 4-1. The process begins when the school district enters into an Environmental Oversight Agreement with DTSC for oversight of the PEA as follows:

- School district submits the Environmental Oversight Program application, which can be found at http://www.dtsc.ca.gov/Schools/index.cfm#Forms, to the DTSC Agreement Coordinator.
- DTSC Agreement Coordinator processes the application and returns two original Environmental Oversight Agreements to the school district for signature.

- School district signs and returns both originals to the DTSC Agreement Coordinator using a mail tracking system.
- DTSC Agreement Coordinator finalizes the Environmental Oversight Agreement for signature.
- DTSC Agreement Manager signs the Environmental Oversight Agreement.
- DTSC Agreement Coordinator returns one fully executed original Environmental Oversight Agreement to the school district, along with a request for an advance payment.
- DTSC Agreement Coordinator forwards the Environmental Oversight Agreement to the appropriate Unit Chief for assignment of a DTSC Project Manager;
- DTSC Project Manager contacts the district to schedule a PEA scoping meeting.

DTSC recognizes that some districts are required to present the Environmental Oversight Agreement to their school board during their monthly board meeting, therefore the DTSC Project Manager may be assigned prior to execution of the Environmental Oversight Agreement. It is essential that the Environmental Oversight Agreement be fully executed prior to DTSC review of documents; however to assist the district, a scoping meeting may be scheduled prior to Environmental Oversight Agreement execution. Once the Environmental Oversight Agreement is fully executed, the Project Manager will be responsible to assist the district through the PEA process.

DTSC encourages the district take an active role in the PEA process to ensure their specific project is managed in a highly effective and efficient manner. In addition, DTSC offers every opportunity for the school district to ask specific questions about the process, their project, and to communicate their schedule to DTSC. The district should be present at all pertinent meetings so that they may understand PEA process and to ensure their consultant is competent to execute the proposed investigation with the district's best intentions in mind. In taking an active role in the PEA process, the district will better understand the process and will be able make sound decisions, with their consultant, throughout the course of the project.

Figure 4-1
PEA Review and Approval Process

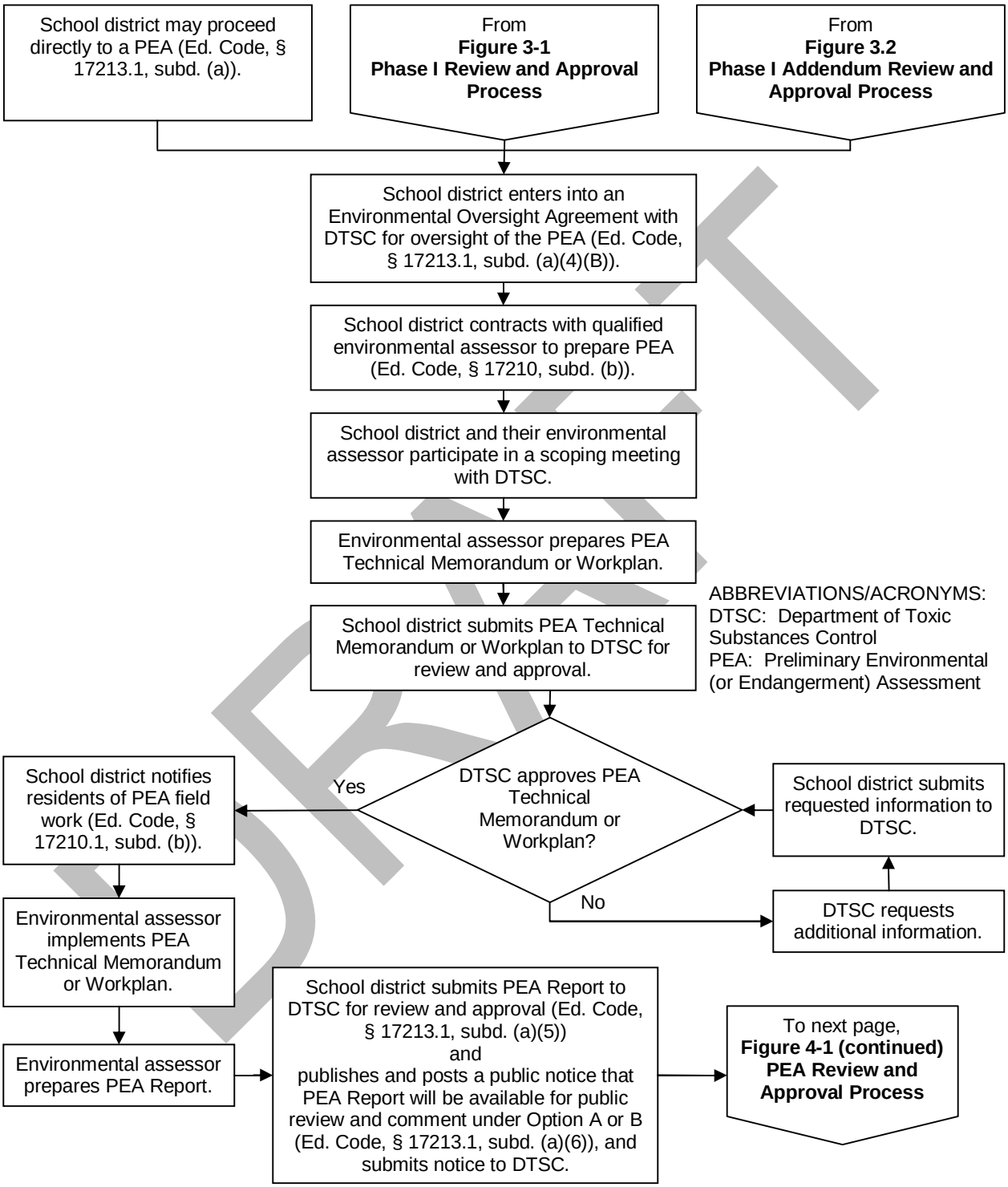
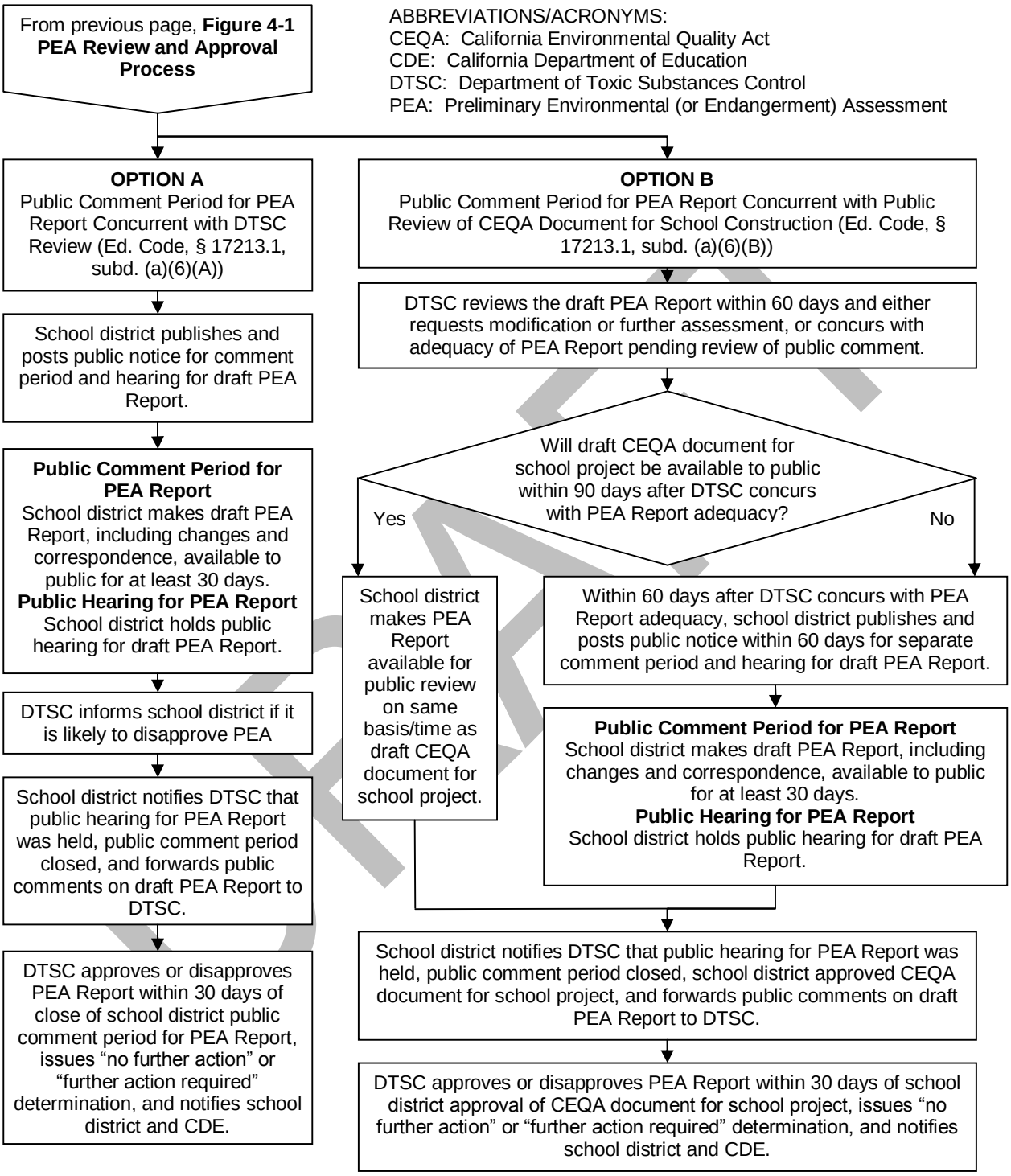


Figure 4-1 (continued)
PEA Review and Approval Process



4.4.1 PEA Scoping Meeting

After the Environmental Oversight Agreement has been executed and the DTSC Project Manager assigned, the DTSC Project Manager will review the existing documentation for the site. Such documentation may include a Phase I or other background documentation such as a site assessment, an environmental impact report, historical site closure reports, or other documentation relating to the recognized environmental conditions identified at the site. The Project Manager will then submit work requests for assignment of toxicology, geology, and/or engineering support staff. The DTSC Project Manager then contacts the district and its environmental assessor to set up a PEA scoping meeting. The PEA scoping meeting is a planning activity to introduce all participants to the PEA process as well as discuss details of the PEA investigation process, history of the site, environmental data needs, and schedule for the proposed investigation. In some cases, the DTSC Project Manager may elect to conduct a site visit prior to the scoping meeting to clarify potential discrepancies in the information provided in the background documentation.

Participants in the scoping meeting should include representatives from DTSC, the District and their consultant, and other stakeholders, as appropriate. Typically, the DTSC team will include a project manager, their respective supervisor, a toxicologist, and a geologist. A site visit may follow a meeting depending on the schedule of the scoping meeting. Conducting a scoping meeting in which all of the participants involved understand the investigation process and how it applies to the subject school site is an essential part of successfully completing the project. If the scoping meeting is left out of the process, then project misunderstandings and delays will likely occur.

In preparing for the scoping meeting, it is the DTSC Project Manager's responsibility to ensure that all participants are clear on their role for the project. Prior to the scoping meeting, the DTSC Project Manager should prepare an agenda. and send it to all parties that will attend the meeting. A PEA Scoping Meeting Agenda sample is provided in Appendix J. Typical items to be discussed during the scoping meeting are:

- Introduction of key players and stakeholders (should include a sign-in sheet to document meeting participants and gather contact information)
- District's schedule and funding requirements to meet CDE approval
- Summary of the PEA process
- Status of the Environmental Oversight Agreement between the district and DTSC
- Discussion of background information for the site
- Identification of recognized environmental conditions that require investigation
- Sampling strategy
- Preparation of PEA documents
- PEA public comment period, public hearing, and Option A or Option B
- Project schedule

The benefits of a scoping meeting will be limited only to the quality of information presented. If the site did not receive a determination through a Phase I review, background information equivalent to this report should be prepared and submitted to DTSC prior to the scoping meeting. Relevant site information should include historic

and current site usage, records reviews, site reconnaissance, and interviews. Please refer to the ASTM Standard Practice for Environmental Site Assessments: Phase I Process, E1527, for guidance on attaining relevant site information. The site information should be summarized and provided in a scoping document.
The school district or its consultant should prepare a packet with the following items:

- Summary of background information (typically derived from the Phase I) discussing:
  - Site description and ownership
  - Site history, current usage
  - Surrounding site history, current usage
  - Location map
  - Site plan (which shows all historic and current site features)
  - Aerial photographs
  - Topographic maps
  - Prior investigations
  - Regulatory status of site and adjacent properties
  - Additional site information from other public agencies, city directories, permits, inspection reports, photographs
  - Database search (federal, state, and local)
  - Geology (soil type)
  - Hydrogeology (depth to groundwater and flow direction)
- Description of recognized environmental conditions
- Summary of the field sampling and analysis plan
  - Site plan with defined areas of concern and corresponding legend
  - Table with following the headings: boring identification, type of sample, depths of samples, analyses, and rationale.
- Proposed schedule

DTSC recommends after a meeting, that the district or consultant provide minutes to DTSC for concurrence of discussion. Documentation of the scoping meeting minutes will ensure all meeting participants understand project expectations and agree on project activities. In lieu of meeting minutes, the DTSC Project Manager may elect to prepare a summary of the meeting, which documents key decisions and action items. The meeting minutes or summary should be distributed by e-mail to the project team. The district and its consultant will prepare a PEA workplan based on the outcome of the scoping meeting.

4.4.2 PEA Technical Memorandum Sample

Following the project's scoping meeting between DTSC and the school district representatives, the district will submit a PEA Workplan. In most cases, a fully developed, formal, stand-alone PEA workplan is recommended. However, submission of a PEA Technical Memorandum may be considered by DTSC in lieu of a formal PEA Workplan in cases where the recognized environmental conditions identified at the site are addressed by DTSC guidance with sample and analytical protocols, such as agricultural properties with potential OCPs and metals, sites with potential lead-based

paint, termiticide application or electrical transformers, or sites with potential NOA. An annotated sample for a PEA Technical Memorandum is provided in Appendix K.

Use of a PEA Technical Memorandum needs to be discussed among the project team and agreed upon by DTSC during the PEA scoping meeting. All review and comment periods for a standard PEA Workplan apply; however, because of the simplified format, the DTSC Project Manager may agree to shorten review and comment periods to accommodate an expedited schedule.

4.4.3 PEA Workplan Sample

For sites where multiple recognized environmental conditions are identified, more than one media is involved (such as soil vapor, soil, and groundwater), or where in-field decision making is required (such as in a Triad sampling approach), a complete stand-alone PEA Workplan is recommended. An annotated sample for a PEA Workplan is provided in Appendix L.

Data quality objectives should be developed for the project. A thorough development of the data quality objectives will help identify data gaps and determine appropriate sampling locations and depths, sample quantities, and appropriate QA/QC to fill those data gaps. The PEA workplan must include all information necessary for implementing field work including a site-specific Health and Safety Plan and a Quality Assurance Project Plan. The following U.S. EPA guidance documents may be useful in developing a PEA Workplan that adequately addresses the environmental concerns at the site:

- *Guidance on Systematic Planning using the Data Quality Objectives Process (QA/G-4)* (U.S. EPA 2006a)
- *Decision Error Feasibility Trials (DEFT) Software (QA/G-4D)* (U.S. EPA 2001a)
- *Guidance for Quality Assurance Project Plans (QA/G-5)* (U.S. EPA 2002b)
- *Guidance on Choosing a Sampling Design for Environmental Data Collection (QA/G-5S)* (U.S. EPA 2002c)
- *Systematic Planning: A Case Study for Hazardous Waste Site Investigations (QA/CS-1)* (U.S. EPA 2006b)

The requirements for a formal PEA workplan should be discussed and agreed upon by DTSC and the district during the PEA scoping meeting.

4.4.4 Public Notice for Field Work

After DTSC approves the PEA Technical Memorandum or Workplan, the district shall provide a notice to residents in the immediate area of the proposed school site, prior to the commencement of work at the site, utilizing a format developed by DTSC (Ed. Code § 17210.1, subd. (b)). Sample formats for required work notices are provided in Appendix M. This includes a work notice to be distributed to residences and a separate work notice to be posted around the perimeter of the site. The language included in the format should be modified by the school district to be site specific and the letter should be distributed on the district's letterhead paper. The work notice should include both district and DTSC contact information.

DTSC recommends the work notice be mailed or hand-delivered to all residences and businesses within view of the site, so that it is received at least three to five days prior to the commencement of field work.

The district should provide the DTSC Project Manager with a copy of both the site-specific work notice and a copy of the distribution address list as proof of service.

4.4.5 Field Work

Field activities for the PEA should follow the PEA Technical Memorandum or Workplan approved by DTSC. If site conditions differ from those presented in the DTSC-approved PEA Technical Memorandum or Workplan, additional work may be necessary. Prior to the start of field work, the school district should submit a schedule that includes dates for field work, public participation activities and submission of the PEA Report.

Additionally, the school district should notify DTSC a minimum of 48 hours in advance of field work or schedule changes.

4.4.6 PEA Report Sample

The purpose of the PEA report is to document the procedures and results of the PEA investigation (data collection and analysis), present human health risk and ecological screening evaluations, present findings for the site, and make recommendations based on findings.

The following general guidelines are presented to facilitate the preparation of the PEA report and DTSC's review and approval process:

- All data provided in the PEA report should be presented as clearly and concisely as possible. The use of lists, bulleted outlines, tables, and figures are preferred over long narrative discussions.
- References, photographs, laboratory analytical reports, and other supporting documentation which are used to substantiate statements in the PEA report should be attached as appendices.

If any information required in the PEA report cannot be obtained, a statement to that effect should be included in the report within the uncertainty analysis (if the deficiency potentially affects the outcome of the risk assessment) or in a section titled *"Deviations from Workplan"* (for other deficiencies or problems that do not affect the risk assessment). An annotated sample of a PEA Report is provided in Appendix N.

4.4.7 Public Comment Period and Hearing

DTSC is mandated under Education Code, section 17213.1 to strict timelines for PEA reviews. DTSC review times are dependent on the option that the district chooses for making the PEA report available for public comment. School districts have two options for making the PEA Report available for public review and comment (Ed. Code, § 17213.1, subd. (a)(6)(A) or (B)). Both options require the school district to prepare,

publish, and post a public notice that encourages public participation during the comment period and provides the following information:

- Name and location of the site
- Statement that the PEA Report has been submitted to DTSC
- School district intent to make the PEA available for public review and comment pursuant to Option A or B
- Information repositories and administrative record
    - Location
    - Business hours – at least one repository should be open after business hours (5:00 p.m.) and/or have weekend hours
    - Contact information to schedule an appointment
    - A DTSC office may be used as an additional repository
- Start and end date of the public comment period
- Date, time, and location of the associated public hearing
- How oral and written comments should be submitted
- Contact person and how to reach him or her

The public notice shall be distributed as follows:

- Publish a notice in a local newspaper of general circulation (Ed. Code, § 17213.1, subd. (a)(6)) on or before the first day of the public comment period.
- Post the notice in a prominent manner at the proposed school site (Ed. Code, § 17213.1, subd. (a)(6)) on or before the first day of the public comment period.

The following are also recommended:

- Mail a copy of the public notice to key contacts for the site including legislators, local elected officials, community leaders, and school district officials.
- Include a copy and proof of publication(s) in the final PEA report or provide to DTSC separately.

The public notice must be published in a general circulation local newspaper or regional section of a major metropolitan newspaper, if it is the only general circulation newspaper in the area. A general circulation newspaper is a daily or weekly newspaper covering a variety of topics distributed to the general public not a specialized organization (i.e. a legal notice only periodical is not a general circulation newspaper).

Display advertisements (ads) are used to announce the availability of reports and meeting dates. Display ads are a form of public notice that appear in the main sections of the newspaper (e.g., news, feature, regional), and are therefore more likely to be seen by a larger segment of the targeted community.

In areas where non-English-speaking residents might be affected, ads/notices should be translated and placed in area ethnic newspapers that publish in the language appropriate to that segment of the population. Also, the notices should be written in a clear and direct manner. Avoid the use of technical language and jargon,

and be sure to place the most important information in the beginning. Use active voice and remember the audience is the general layperson in the community. The public notice format for a public comment period and hearing is provided in Appendix M.

The following documents shall be placed in the information repositories and administrative record:

- PEA Report
- Any changes to the PEA requested by DTSC
- Any correspondence between the school district and DTSC relating to the PEA

These documents shall be made available to the public through the time of the public hearing. If the PEA is revised or altered following the public hearing, the school district shall make those revisions or changes available to the public by placing a revised PEA Report in the information repository.

The following subsections describe the two options for making the PEA report available for public comment.

4.4.7.1 OPTION A – PUBLIC COMMENT PERIOD FOR PEAD REPORT CONCURRENT WITH DTSC REVIEW

Under Education Code, section 17213.1, subdivision (a)(6)(A), or "option A", the school district must offer the draft PEA document for at least a 30-day public review and simultaneously submit the document to DTSC for review. A public notice for the public comment period and hearing is published for at least one day in a local newspaper which commences the minimum 30-day comment period. The public notice includes the information on the PEA report and where it can be reviewed, the dates of the public comment period, an offer to receive written comments from the public, the date of the public hearing to be held by the school district, and contact information. The public notice must also be posted prominently at the project site. It is recommended that the notice also be posted at the school district office.

DTSC shall inform the school district if it is likely to disapprove the PEA, prior to receiving any public comments, and any action required for the school district to obtain approval.

The school district must hold a public hearing, preferably on or about the 15th day of the public comment period, to receive further comments. School districts can elect to conduct the public hearing during a normal school board meeting if the date of the normal school board meeting falls on or near the 15th day of the public comment period. Draft meeting minutes should include documentation of the public hearing.

After the close of the public comment period, the school district provides written notification to DTSC that it has complied with Education Code requirements for a public comment period and hearing. Additional supporting documentation, such as a copy of the public notice, proof of publication, and draft meeting minutes from the public

hearing, should be included. Upon close of the public comment period, DTSC has up to 30 days to approve or disapprove the PEA report.

4.4.7.2 OPTION B – PUBLIC COMMENT PERIOD FOR PEA REPORT CONCURRENT WITH PUBLIC REVIEW OF CEQA DOCUMENT FOR SCHOOL CONSTRUCTION

The school district has the option to offer the PEA report for public comment under Education Code, section 17213.1, subdivision (a)(6)(B), or "option B". Under option B, if the school district decides to move forward with site acquisition and/or construction, it must submit a DTSC-approved PEA report for public comment, simultaneously with the EIR or negative declaration (in accordance with CEQA), within 90 days of DTSC approval.

Under this option, the school district submits a draft PEA report to DTSC for review and places a notice in a local newspaper describing the project and stating that the PEA report will be made available for review under option B. DTSC must complete the review of the draft PEA report and either provide comments on the report for revision, request additional site assessment, or approve the adequacy of the report for public comment within 60-days of receipt. If revisions are required, the school district must complete the revisions and resubmit the PEA report for approval by DTSC. If DTSC concurs with the adequacy of the PEA, the school district shall make the PEA available to the public on the same basis and time it makes available the draft Environmental Impact Report (EIR) or negative declaration for the school project, pursuant to the California Environmental Quality Act (CEQA).

The school district will normally provide one notice of the public review period for both the PEA and the draft CEQA document that would be published simultaneously with the circulation of the draft CEQA document through the State Clearinghouse (SCH). Unless a SCH shortened review period is granted, the public and state agency review period would normally be 30 days for a negative declaration and 45 days for a draft Environmental Impact Report (EIR). At the close of the CEQA comment period, DTSC has 30 days to review and consider any comments and issue a determination. Under option B, DTSC's total review time is 90 days.

If the school district cannot make the report available for public review with the EIR or negative declaration within 90 days of DTSC approval, then the school district must follow option A, separately publish a notice of availability of the PEA for public review in a local newspaper of general circulation, and make the report available for public comment within 60 days of DTSC approval. All other public participation documentation requirements apply.

4.5 POSSIBLE DETERMINATIONS

Following completion of the public comment period and hearing, consideration of any public comments, and if necessary, after approval of a final revision of the PEA report, DTSC will issue a determination of "no further action" or "further action required".

4.5.1 No Further Action

DTSC will make a "no further action" determination for a site if the PEA report demonstrates that no release of hazardous material has occurred, there is no threat of a release of hazardous materials, and no naturally occurring hazardous material is present at the site that pose a threat to human health or the environment under unrestricted land use. DTSC will prepare a formal letter to the district that states that a no further action determination has been made, which can then be submitted to CDE for final site approval.

Pursuant to Education Code section 17213.2, subdivision (e), if a previously unidentified release or threatened release of a hazardous material or the presence of a naturally occurring hazardous material is discovered anytime during construction at the site, the district shall cease all construction activities at the site and notify DTSC. Additional assessment, investigation, or cleanup may be required. Activities to address environmental findings during school construction are included in Appendix F.

4.5.2 Further Action Required

DTSC will make a "further action required" determination if the PEA report indicates that a release or threatened release of hazardous material or the presence of a naturally occurring hazardous material, which would pose a threat to public health or the environment under unrestricted land use, exists at the site.

DTSC may determine that further action is required for several reasons including the need for additional investigation to fill data gaps identified during the PEA, delineation of contamination identified during the PEA, to conduct a Remedial Investigation/Feasibility Study, or to implement a response action such as a RAW or RAP.

Further action may include additional investigation (Ed. Code § 17213.1, subd. (a)(10)) in the form of a Supplemental Site Investigation (SSI) to verify and/or characterize the nature and extent of any environmental condition or chemical contamination determined to pose an unacceptable risk to human health or the environment. The SSI is described in Chapter 5.

In some cases, the data generated during the PEA is sufficient to determine that a Remedial Investigation/Feasibility Study or response action, such as a removal or remedial action, is necessary. These actions are conducted in accordance with Health and Safety Code, division 20, chapter 6.8, section 25300 et seq. (Ed. Code § 17213.2, subd. (a)) and are beyond the scope of this guidance.

4.6 OPTIONS

4.6.1 Elect not to Pursue Acquisition or Construction

If the PEA Report determines that a release of hazardous material has occurred, that there is the threat of a release of hazardous materials, that a naturally occurring hazardous material is present, or any combination thereof, that requires further investigation and the school district does not own the site, the school district may elect

not to pursue the acquisition or construction project (Ed. Code § 17213.1, subd. (a)(10)).

4.6.2 Environmental Hardship Funding Approval

If a school district elects to proceed with cleanup (removal or remedial action) and plans to apply for "environmental hardship" funding approval, it should request that DTSC specify in the determination letter that preparation and implementation of the required response action is estimated by DTSC to take six months or more for completion. "Environmental hardship" with CDE "contingent" site approval allows a school district to seek advanced or early State Allocation Board funding prior to completion of response action.

4.6.3 Off-Site Source of Groundwater Contamination

School districts and LEAs are not required to take action in response to a release of hazardous material to groundwater underlying a school site if the release occurred at a site other than the school site and if the following specific conditions apply (Ed. Code, § 17213.2, subd. (b)):

1. School district did not cause or contribute to the release of hazardous material to groundwater.
2. School district provides access to the school site.
3. School district does not interfere with response action activities.

However, if the school site is the source of hazardous materials impacting groundwater, DTSC will require that school districts and LEAs take appropriate response actions as required by DTSC. DTSC cautions school districts and LEAs that cleanups of groundwater contamination may take longer and be more costly than response actions for contaminants in soil.

4.6.4 Partial Site Approval

A school district may submit a written request for "partial site approval" from DTSC to proceed with construction on portions of the site that DTSC determines are not impacted by the release or threatened release of hazardous materials, provided that all of the following three requirements are met (Ed. Code, § 17213.2, subd. (f)):

1. DTSC determines that construction will not interfere with any required response actions
2. Site conditions will not pose a significant threat to the health and safety of workers involved with construction
3. The nature and extent of any release of hazardous materials or the presence of any naturally occurring hazardous materials have been fully characterized.

4.6.5 School Facilities Planning Division 4.14 Form

If lead in soil from lead-based paint, organochlorine pesticides in soil from termiticide application, and/or polychlorinated biphenyls in soil from electrical transformers, are the only potential release or presence of hazardous materials identified in the Phase I, a

school district may submit California Department of Education, School Facilities Planning Division form 4.14 to DTSC for signature.

This form allows a school district to seek final site approval and/or final plan approval from California Department of Education with a DTSC-approved Phase I or PEA, prior to completing DTSC requirements for further investigation or cleanup of these contaminants.

Final site approval or final plan approval from California Department of Education allows school districts to seek full State Allocation Board site acquisition apportionment and/or new construction project apportionment, including the state share of costs based upon eligible actual or estimated cleanup costs (if any) known at the time of the application. By signing this form, the school district commits to complete all investigation and cleanup activities required by DTSC prior to grading affected areas of the project site. The school district also acknowledges that any related additional cleanup costs may be the full responsibility of the school district and would be subject to applicable funding adjustment limits and criteria. Pursuant to the Education Code, funding shall be rescinded if criteria to have funds released within 18 months of apportionment are not met.

School districts may complete the top portion of the form, and submit the form to DTSC, along with a copy of the DTSC Phase I determination letter, for completion of the lower portion of the form; DTSC will forward the completed form via facsimile and mail to CDE and the school district. California Department of Education will issue final approvals upon receipt of the completed form and when all other California Department of Education site or plan requirements have been met.

4.6.6 School Facilities Planning Division 4.15 Form

If DTSC has determined that further investigation and/or cleanup is required, a school district may submit School Facilities Planning Division form 4.15 to DTSC for signature. This form allows a school district to seek final site approval and/or final plan approval from CDE, prior to completing DTSC requirements for further investigation and/or cleanup. Note that this form is not required for soil contamination associated with lead-based paint, OCPs from termiticide application, or PCBs from electrical transformers, which are addressed using School Facilities Planning Division 4.14 form.

Final site approval or final plan approval from CDE allows a school district to seek full State Allocation Board site acquisition apportionment or new construction project apportionment, including the state share of costs based upon eligible actual or estimated cleanup costs (if any) known at the time of the application. By signing this form, the school district commits to complete all investigation and cleanup activities required by DTSC prior to occupancy of affected areas of the project site. The school district also acknowledges that any related additional cleanup costs may be the full responsibility of the school district and would be subject to applicable funding adjustment limits and criteria. Pursuant to the Education Code, funding shall be rescinded if criteria to have funds released within 18 months of apportionment are not met.

Prior to requesting DTSC completion of this form, a school district will be requested to enter into a School Cleanup Agreement with DTSC. Refer to section 2.6.4 for DTSC agreements. The SFPD 4.15 form may be utilized by a school district for school projects falling into one or more of the following four categories:

A. DTSC has approved the draft or final RAW or RAP for the required response actions for the site.
B. DTSC has determined that the required response action must be implemented in the design and/or construction of the proposed project, such as school sites with methane gas (where a venting system must be installed in individual buildings to prevent gas accumulation within buildings), or with naturally occurring asbestos (where caps or other barriers must be placed over soils to prevent exposure).
C. DTSC has issued a "partial site approval" where the response action and proposed construction projects are located on separate portions of the site, and will not interfere with each other.
D. DTSC has overseen completion of required response actions but determined that further groundwater investigation is still required which may also require additional response actions, but will not impact school construction or occupancy.

A school district may complete the top portion of the form, and submit the form to DTSC, along with a copy of the DTSC determination letter, for completion of the lower portion of the form; DTSC will forward the completed form via facsimile and mail to CDE and the school district. CDE will issue final approvals upon receipt of the completed form and when all other site or plan requirements have been met.

4.7 AVAILABLE DTSC SAMPLING GUIDELINES

Appendix O includes a list of available DTSC guidance documents and other pertinent documentation that may be useful in developing and implementing PEA investigations. Included in the table are links to DTSC websites where these documents can be reviewed and downloaded. These guidance documents are frequently updated and revised. The latest versions of DTSC guidance related to school sites can be found through links on the DTSC website, "Evaluating and Cleaning-Up School Sites," at <http://www.dtsc.ca.gov/Schools/index.cfm>.

4.8 INVESTIGATION AND SAMPLING METHODS IN VARIOUS MEDIA

The following subsections describe various investigation and sampling methods for a variety of media that may be encountered during a PEA investigation.

4.8.1 Geophysical Survey

Geophysical techniques are commonly used during environmental assessment work. They can be used to locate buried objects such as underground storage tanks (UST), pipes, and drums, munitions and explosives of concern and unexploded ordnance, for mapping landfill boundaries, detecting leachate, and revealing contamination migration pathways. Several geophysical techniques are commonly used in the evaluation of environmental hazards, including magnetic methods, ground penetrating radar (GPR),

borehole logging, and electromagnetic methods (EM). See Table 4-1 for a more complete listing of methods and some typical applications.

Magnetic methods can detect any steel or iron object (e.g., drums, tanks, pipes, etc.). The resolution and sensitivity of these methods depend on the size and shape of the steel or iron object and the depth of burial.

GPR provides a detailed profile of the near-surface soils. It can often detect buried tanks, drums and utilities. GPR targets need not be electrically conductive or possess magnetic fields, allowing plastic tanks and pipes and other non-metal objects to be identified.

EM can detect any metallic object that readily conducts electricity. These methods are very effective in locating pipes, cables, and other utility lines, but can also be used for locating other metallic objects such as tanks, drums, other buried debris, and even munitions and explosives of concern and unexploded ordnance, all of which alter soil conductivity.

Seismic refraction, seismic reflection, self potential, and DC resistivity, are typically used in groundwater applications, but can also be useful in determining leachate pathways and detecting the presence of dense non-aqueous phase liquids.

It is suggested that the investigator contact an expert in geophysics, (i.e. a geophysicist registered in the State of California), to determine if a geophysical survey would be beneficial for a particular investigation. Furthermore, an expert can recommend which technique or techniques would be most effective given the specific circumstances of the investigation.

Table 4-1
Geophysical Techniques and Typical Applications

TECHNIQUE	TYPICAL APPLICATIONS
Magnetics (responds to ferrous metals)	• Locate buried tanks and pipes • Locate abandoned steel well casings • Locate pits and trenches containing buried metallic debris • Detect buried unexploded ordinances • Map old waste sites and landfill boundaries • Map basement faults and lithologic contacts
Electromagnetics (depth and sensitivity vary by make and model of equipment)	• Locate buried tanks, pipes, and utility lines • Locate pits and trenches containing metallic and/or non metallic debris • Delineate landfill boundaries/ buried waste • Delineate oil production sumps and mud pits • Map conductive soil and groundwater contamination (plume definition) • Map soil salinity in agricultural areas and zones of saltwater intrusion • Characterize shallow subsurface hydrogeology

TECHNIQUE	TYPICAL APPLICATIONS
	• Locate areas of groundwater seepage • Map buried channel deposits, locate sand and gravel deposits, locate conductive fault and fracture zones • Determine depth to bedrock or the water table
Ground Penetrating Radar (antenna height and frequency affect resolution)	• Locate rebar and pipes in concrete • Locate metallic and non metallic utilities • Locate buried tanks and pipes • Locate septic tanks, sumps, and leach fields • Locate subsurface voids, cavities, and tunnels • Map backfilled trenches and disturbed soils/landfill or excavation • Map shallow groundwater interface and buried paleochannels • Map contamination plumes in shallow soils • Map shallow clay lenses
Resistivity	• Locate depth to groundwater or bedrock • Determine thickness of soils • Evaluate contaminant plumes (vertically and laterally) • Locate buried wastes/trenches • Determine location of water filled bedrock fractures • Mineral exploration
Seismic Refraction	• Determine depth to water table or depth to bedrock • Locate fracture zones in bedrock • Determine rippability • Used for bedrock contour mapping • Evaluate rock properties
Seismic Reflection	• Graphically depicts subsurface stratigraphy and bedrock profiles • Differentiate unconsolidated units (e.g., sand lenses, clay lenses, gravel beds) • Map lateral continuity of geologic layers • Map faults in sedimentary layers • Conduct aquifer location survey • Map buried paleochannels • Map DNAPL
Gravity	• Determine depth to bedrock (especially landfill contact) • Mapping large metallic mineral; deposits • Locating subsurface caverns
Induced Polarization	• Discriminates clay from silt or sand, where formation resistivities are similar • Detection of disseminated metallic minerals, sulphides, graphite, and clays • *recently applied to hazardous waste landfills and groundwater investigation to identify clay zones
Borehole Logging	• Vertical mapping of overburden and bedrock stratigraphy • Determine location and orientation of bedrock fractures or fracture zones • Provides accurate location of well screens or placement • Crosshole studies • Monitoring of borehole conductivity changes over time

4.8.2 Soil Gas

Active soil gas investigations are useful to obtain vapor phase data at sites potentially affected by volatile organic compounds (VOCs), including chlorinated and aromatic hydrocarbons. Active soil gas investigations may also be used to investigate sites potentially affected by methane and hydrogen sulfide, and to measure fixed and biogenic gasses (e.g., oxygen, carbon dioxide, or carbon monoxide). Among other things, the data can be used to identify the source and determine the spatial distribution of VOC contamination at a site, or to estimate indoor air concentrations for risk assessment purposes.

Typically, soil gas data are more representative of actual site conditions in coarse-grained soil formations while soil matrix data are more representative of actual site conditions in fine-grained soil formations. For evaluating the risk associated with vapor intrusion to indoor air, soil gas data are the preferred contaminant data set, where practicable.

All soil gas sampling probe installation, sampling, and analytical procedures are discussed in details in the soil gas guidance, *Advisory – Active Soil Gas Investigations* (DTSC/LARWQCB 2003). Any active soil gas investigation should be performed in accordance with the most current version of this guidance.

4.8.3 Soil Matrix

The intent of soil sampling is to characterize and estimate the limits of existing soil contamination. Soil samples should be obtained from where the highest concentrations of contaminants are suspected. The primary strategies used during the PEA to determine soil sampling locations are authoritative and systematic random sampling. Authoritative or “biased” sampling can be used to detect the highest concentrations of each contaminant and the general extent of contamination at sites where potential release locations are known. In this strategy the person collecting the samples selects the sampling locations using personal judgment; generally in areas where the highest concentrations of contaminants are suspected.

If existing information provides no basis for predicting where hot spots might occur, systematic random sampling can be used to determine the location and general extent of contamination at sites where the areas of release are not well known. Field screening technologies can be useful for directing soil sampling into areas of greatest contamination or “hot spots”. Systematic random sampling involves the collection of samples at predetermined, regular intervals of a grid placed over an area potentially impacted by a release. The reader should consult *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods*, U.S. EPA Publication SW-846, (U.S. EPA 1986) for more detail on the sampling strategies.

The PEA will require the collection of subsurface soil samples to assess the vertical extent of contamination and the potential for groundwater contamination. The maximum

depth of sampling will depend on the potential from migration of the contaminants through soil. Individual sample depths must be based on site specific lithology. Continuously cored boreholes must be installed to the anticipated depth of sampling at suspected locations of contamination. The continuous cores must be geologically logged and described for use in determining the depths at which samples are to be collected. Specially, contacts between fine- and coarse-grained sedimentary units must be defined. Samples for analysis must be collected from fine-grained sediments occurring immediately adjacent to contacts with coarse-grained units. In the vadose zone, fine-grained materials may act as avenues for contaminant migration and may retard or restrict the downward migration of contamination if it is moving by semi-saturated (or saturated) flow. Sampling location should also be targeted at depths where information collected from direct reading instruments and physical observations indicate contamination may exist. Field screening methods used (e.g. XRF, PID, and field test kits) should be discussed in the workplan prior to field activities.

At most sites, the samples collected and analyzed for PEA are to be discrete samples. Composite samples are not recommended during the PEA, because the PEA usually involves relatively limited sampling, and each sample should provide as much information as possible. However, composite sampling can be approved by DTSC in advance based on site-specific conditions (e.g., agricultural land).

At sites where volatile organic compounds (VOCs) are suspected, the use of soil gas survey is recommended as an indicator for the presence and general extent of soil contamination and the potential for groundwater contamination. After identifying the areas of concern via soil gas sampling, soil samples may be collected to obtain concentrations for use to delineate extent of contamination.

4.8.4 Groundwater

The determination whether groundwater sampling is necessary at the site, including construction of monitoring wells, is based on a comparison of depth to local groundwater and depth of soil contamination. Groundwater sampling may not be necessary when contamination is known to be restricted to few feet below the ground surface and groundwater is a significant depth below ground surface. Subjective criteria can be used for some geologically well-characterized sites to make the decision not to install monitoring wells. For example, if the contaminants are relatively immobile and positively known to have been used or disposed in relatively small quantities at the ground surface, monitoring wells are probably not necessary.

Groundwater sampling should be performed at the site if any of the following conditions exist:

- Previous sampling data indicates that groundwater is contaminated;
- Historical operations at the site indicate a potential for groundwater contamination due to quantity and/or types of chemicals release and the permeability of onsite soil; and
- Soil and/or soil gas data indicates the potential for groundwater contamination.

- Data indicates that off-site sources of contamination have the potential to impact groundwater beneath the site.

When monitoring wells are required during the PEA investigation, a minimum of three (3) monitoring wells will be constructed with screened intervals across the water table. The purpose of monitoring wells is to establish the groundwater database, determine direction of groundwater flow, and identify through sampling if groundwater has been affected by migration of contaminants. Therefore, in addition to sampling for suspected contaminants, water levels should be measured in monitoring wells to check for fluctuations and obtain groundwater elevation data not biased by short-term aberrations, seasonal fluctuations, or off-site intermittent well pumping. These measurements are used to construct water contour maps, calculate gradients, and identify flow direction. Well installation and monitoring is available in *Guidlines for Hydrogeologic Characterization of Hazardous Substance Release Sites* (Cal/EPA 1995). Site-specific guidelines for the groundwater monitoring program will be developed in conjunction with DTSC staff; including the construction of more than three (3) monitoring wells.

In addition to sampling for suspected contaminants, water quality parameters should also be analyzed when elevated concentration of contaminants are detected in groundwater. The screening groundwater samples obtained from other sampling techniques (e.g., hydropunch, temporary wells) should also be discussed in the proposed workplan.

Periodic groundwater monitoring may be necessary to verify and assess variability of concentrations in groundwater.

4.8.5 Surface Water

Surface water bodies that pass through or border the site and have a potential to be affected by the contamination need to be sampled. Surface water features may include erosion patterns and surface water bodies such as ditches, streams, ponds, and lakes. The transport of contaminants in surface water bodies is largely controlled by flow, which is streams is a function of the gradient, geometry, and coefficient of friction. Contaminants have three possible modes of transport: (1) sorption onto the sediment carried by the flow; (2) transport as suspended solid; and (3) transport as solute (dissolved).

Contamination of surface water is sometimes the result of an incidental release of contaminants such as the overflowing or breach of a surface impoundment. In these cases, it is not likely that routine surface water sampling will show contamination that has or may occur. Therefore, to document whether such release occur, sampling should be conducted during or following periods of heavy rainfall when possible.

Surface water sampling locations should be chosen at the perceived locations of contaminant entry to the surface water and downstream, as far as necessary, to document the extent of contamination. The methods used to collect samples should be based upon the type of contaminants, type of water body, flow rate of water, and other physical features. Samples should be collected from various locations along the runoff

course that leads from the contamination to the water body; at the point where the runoff course enters the water body; up-gradient from that point; and down-gradient from that point.

4.8.6 Sediment

A potentially more serious and common problem associated with surface water is the contamination of sediments. Whereas contamination in surface water tends to become diluted or transformed as it travels downstream, contaminants deposited in sediments tend to remain in place. It is therefore important to collect samples for sediment contamination if it is suspected that surface water has been contaminated.

The choice of sampling locations for sediments is similar to the criteria applied to surface water sampling. It should be noted that sediment contamination often consists of inorganic and/or nonvolatile organics. Sediment samples should be collected from various locations where the potential exists for nonsoluble or slightly soluble contaminants to settle, which may include locations along the runoff course that leads from the contamination to the water body; at the point where the runoff course enters the water body; up-gradient from that point; and down-gradient from that point.

4.8.7 Air

Volatilization of organics and emissions of airborne particulates can be a concern at hazardous waste sites. For sites at which it appears air emissions are a problem (e.g., surface impoundments containing volatile organics, landfills at which there is evidence of methane gas production and migration, fugitive dust emissions), an air emissions monitoring program may be required.

The PEA determines the potential risk from contaminants via the air pathway by using the known contaminant concentrations in soil gas, soil matrix, and groundwater to estimate the probable concentrations in air. The data can also be obtained following the *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC 2005c). Indoor air sampling may be necessary if groundwater and/or soil gas data indicates that indoor air may be impacted.

In some cases, passive soil gas sampling techniques may be appropriate for obtaining qualitative data and/or when representative soil gas samples cannot be collected. Additionally, passive soil gas data can be used for screening and refining sampling locations for collection of active soil gas data.

4.8.8 Background

Background samples are collected to distinguish between site related contamination and naturally-occurring or anthropogenic contaminant levels. In general, the use of regional background levels for comparison to site contamination is not acceptable.

Background samples can be collected for air, soil, surface water, or groundwater. Background samples for air, surface water, and groundwater should be collected from locations that are upwind/upstream/upgradient of the suspected contamination. In general, a minimum of two upwind/upstream/upgradient and one

upwind/upstream/upgradient samples are recommended to be collected for background information evaluation.

Generally for the PEA, background samples are limited to samples collected from soil for when metals are chemicals of potential concern. Background samples should be collected at or near the site but not in areas likely to be influenced by the contamination and/or facility operations (past or present).

It is unlikely that a sufficient number of background samples will be collected during the PEA investigation to be considered statistically valid. However, the information is useful in comparing relative ranges of background results to onsite contamination. For soil background sample collection, a minimum of four on-site locations should be sampled. Each background sample should be collected from strata similar to onsite samples to which they can be compared. Alternatively, samples may be collected at a depth of 5 to 5.5 feet below ground surface. In order to use background samples from 5 to 5.5 feet below ground surface, a licensed professional must make the determination that the background soils are similar enough geologically to the surface soils as to be representative.

The analytical results for the background samples should be used to determine that the average contaminant concentration that is not a result of a release from the site. If initial sampling reveals a high variability between levels in each sample, more samples should be collected to increase the confidence in the average.

Other background data sets from DTSC-approved investigations at nearby school sites may be substituted for on-site sampling on a case-by-case basis in consultation with DTSC.

4.9 HUMAN HEALTH SCREENING EVALUATION

The purpose of the human health screening evaluation is to provide the risk manager and the public with a health-conservative, preliminary estimate of the potential chronic health hazards and cancer risks from contamination at school sites. The anticipated use of this screening evaluation is to assist the risk manager in deciding whether further site characterization, risk assessment, and/or remediation is necessary for school sites.

The following three risk assessment approaches are described in the following sections along with considerations for their application:

- **PEA Risk Assessment:** this is a streamlined risk assessment based on the *U.S. EPA Risk Assessment Guidance for Superfund (RAGS), Volume I, Human Health Evaluation Manual (Part A)* (U.S. EPA 1989) and is similar to the DTSC *Preliminary Endangerment Assessment: Guidance Manual* (DTSC 1994) with the noted addition of indoor air assessment. Reduced equations for selected exposure pathways are included. This approach should be used for residential or unrestricted land use (Section 4.9.2.1) and when the following approaches are not applicable (Section 4.9.5).

- **California Human Health Screening Levels (CHHSLs):** CHHSLs are screening values developed by the California Environmental Protection Agency (Cal/EPA 2005) for both residential and industrial sites. If CHHSLs are used for the school site risk assessment, only residential CHHSLs should be used (Section 4.9.3).
- **SchoolScreen Spreadsheet:** SchoolScreen is a school-based exposure model developed by the Office of Environmental Health Hazard Assessment (OEHHA 2004). Use of this model provides age specific risk and hazard estimates as well as staff/faculty risk estimates. If SchoolScreen is used for the school site evaluation, an assessment of unrestricted or residential scenarios using either the PEA Risk Assessment or CHHSLs must also be included. The comparison between the school-based and unrestricted risk assessment is required for determining the risk management range for decision making (Section 4.9.4).

In general, the cancer risk and/or the non-cancer hazard are calculated based on the maximum contaminant concentrations found on site. Due to the generic nature of the assumptions used in risk assessment approaches, the cancer risk and hazard estimates are not absolute. Although health-conservative assumptions are used, not all possible exposure pathways are considered, such as the potential for produce to be grown on school sites. The risk assessments are considered reasonable maximum scenarios as opposed to worst case scenarios, and the assumptions are considered to produce sufficiently adequate margins of safety. The risk management point of departure in all of these risk assessments is a cumulative cancer risk of $1x10^{-6}$ and a total hazard index equal to 1. Certain chemicals, such as lead and arsenic that may be present from natural and non-specific anthropogenic sources are not evaluated using these three approaches. Details on these and limited other chemicals can be found in Section 4.9.8.

4.9.1 Chemicals of Potential Concern (COPCs)

The following sections outline the identification of chemicals of potential concern (COPCs).

4.9.1.1 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN (COPCS)

All chemicals that are not eliminated by any of the evaluations listed in [Section 3.4.9 (Data Evaluation)], and that are in excess of background levels for metals (Section 4.9.1.2) should be considered COPCs. All COPCs should be evaluated in the SEAM risk screening evaluation, and COPCs should not be eliminated from the risk characterization process by comparison to screening values or other methods. DTSC approval is required before a chemical can be eliminated from evaluation in the human health screening evaluation.

4.9.1.2 COMPARISON OF SITE METAL DATA WITH BACKGROUND LEVELS

A comparison of site concentrations of metals with background concentrations is useful for identifying the metals that may be present but are not related to contamination. A comparison should be made to determine whether metal concentrations are comparable to background levels. Metals present at levels equivalent to background can be eliminated as COPCs. The following three-step process should be used in comparing

site metal concentrations to background metal concentrations for the initial screening at school sites.

- **Step 1:** If the maximum site metal concentration is less than the maximum background metal concentration, that particular metal can be excluded as a COPC; otherwise, go to Step 2.

- **Step 2:** If the mean site metal concentration is equal to or less than the mean background metal concentration, that particular metal can be excluded as a COPC; otherwise, go to Step 3.

- **Step 3:** The site metal data should be compared to the background metal data to determine the comparability of the two data distributions. If there is generally good overlap of the site and background data sets, that particular metal can be excluded as a COPC. The comparison of data distributions can be either graphical or statistical and should follow the methods identified for arsenic in Section 4.9.8.3.

For more detailed analyses of background approaches consult the following DTSC guidance documents:

- *Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities* (DTSC 1997), under link, "Ambient Metal Concentrations."
- *Final Report, Background Metals at Los Angeles Unified School Sites – Arsenic* (DTSC 2005b).
- *Arsenic Strategies, Determination of Arsenic Remediation Development of Arsenic Cleanup Goals for Proposed and Existing School Sites* (DTSC 2007) [under revision – verify title and date when final is posted].

These guidance documents are available through links on the DTSC website, "Assessing Risk," at <http://www.dtsc.ca.gov/AssessingRisk/index.cfm>. For additional discussion on the specific comparison of arsenic values to background and further considerations for arsenic see Section 4.9.8.3.

4.9.2 Screening Assumptions and Exposure Factors

The following sections outline the parameters of the human health screening evaluation. The use of alternative models and assumptions other than those stated herein requires the approval of the DTSC toxicologist.

4.9.2.1 LAND USE SCENARIOS

To facilitate a health-conservative screening evaluation of risks and hazards at all school sites, DTSC requires the use of the unrestricted or residential land use scenario in the human health risk assessment as a part of the site document. In addition, the school districts may elect to include a separate set of health risk calculations using a school-based land use scenario. Both land use scenarios and their respective exposure

pathways and media of exposure are described below. All site evaluations must include, at a minimum, a risk evaluation using the unrestricted land use scenario.

4.9.2.1.1 Unrestricted or Residential Scenario

The human health risk assessments for proposed school sites must include the evaluation of the site assuming that the land use will be residential, regardless of the current use and zoning for the site (termed residential or unrestricted use scenario). This evaluation assumes that individuals live on the property for six years as a child and 24 years as an adult. Other exposure parameters are consistent with standard residential assumptions in the PEA risk assessment and the residential CHHSLs.

4.9.2.1.2 School-Based Scenario

School-based land use scenarios may be used in addition to evaluations using an unrestricted land use scenario. A school-based scenario generally accounts for the shorter time students are present at school and may have other adjusted exposure assumptions. Exposure duration for staff members, however, is assumed to be 40 years. DTSC uses the SchoolScreen Spreadsheet developed by OEHHA (OEHHA 2004) for evaluation of school-based scenarios (Section 4.9.4). School districts who elect to develop their own school-based scenarios may encounter additional costs both in the development and in DTSC review. A thorough review of all new models is required by DTSC. These additional costs can be avoided by using SchoolScreen which was both reviewed by DTSC and the public.

Risk management determinations that are based on a school-based scenario rather than an unrestricted land use scenario may potentially leave higher concentrations of contaminants on the site. In these cases, land use covenants, operation and maintenance agreements, or other restrictions may be required.

4.9.2.2 CONCEPTUAL SITE MODEL

A conceptual model should be developed in order to assess the appropriate potential exposure pathways which must be addressed in the health risk assessment. The soil and air pathways should be provided for all sites; however, the water pathway will not be applicable at all sites and so it may not need to be provided. The assessment of the potential impact that onsite contamination may have on surface and ground water may be complex and will vary with site-specific conditions. Best professional judgment and information gathered during the scoping and data collection phases of the investigation should be used to assess the potential impact on water resources. The results of this assessment will determine the need for a water risk/hazard estimate. The rationale for eliminating the water pathway must be provided in the PEA report.

4.9.2.3 ROUTES OF EXPOSURE

The following common exposure routes and media of exposure are applicable to the risk evaluation process:

- **Inhalation:** Airborne dust, naturally occurring fibers such as asbestos, VOCs from soil gas and/or ground water (via the vapor intrusion pathway).

- **Oral ingestion:** Incidental ingestion of soil; consumption of water from the site as drinking water.
- **Dermal absorption:** Direct contact with soil and/or water.

Depending on the site characteristics, other pathways of exposure are possible under an unrestricted scenario, and should be agreed upon in consultation with DTSC. In general, potential onsite grown produce is not considered for the risk evaluation at proposed school sites. However possible expectations, such as a community garden, may need to be evaluated. DTSC should be consulted in these cases. If an on-site water source is not to be used for potable and/or irrigation water, it may be excluded from the risk analyses for the ingestions and direct contact pathways. However, the rationale for exclusion should be clearly stated in the document. The risks from potential vapor intrusion from groundwater will still need to be assessed, as well as, potential environmental impacts to groundwater.

4.9.2.3.1 Chemical Groups

Some chemical groups are beyond the scope of this screening assessment since they require more complex toxicological evaluations or represent acute health risks. Examples would be wastes/soils which have a pH less than or equal to 2.0 or greater than or equal to 12.5; medical wastes; reactive/explosive wastes (e.g. munitions, strong oxidizers); and radioactive waste. These wastes require other techniques of investigation and assessment. If chemicals from this group are found on the site, DTSC should be consulted for further directions.

Some chemical groups such as naturally-occurring asbestos (NOA), polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF), and total petroleum hydrocarbons (TPH) require special consideration in the risk assessment process. Further details are provided in Section 4.9.8.

4.9.2.3.2 Exposure Point Concentrations

For conducting a screening-level evaluation of site data, the maximum reported concentration should be used as the exposure point concentration for each COPC detected onsite. For estimating ambient air concentrations of COPCs from particulate suspension, the maximum reported soil concentration can be used in conjunction with the Particulate Emission Factor (PEF) equation discussed in detail in Section 4.9.5.3.1.

In cases where there is adequate site characterization data, subject to review and approval by DTSC, the 95 percent upper confidence limit (UCL) of the mean may be used as the exposure point concentration. DTSC recommends a minimum of 10 samples for estimation of the 95 percent UCL mean concentration. The 95 percent UCL mean concentration should not be calculated where the data suggest a “hot spot”. These “hot spots” should be evaluated separately. In addition, if the detection frequency is less than 50 percent, the 95 percent UCL mean concentration should not be estimated. For estimation of the 95 percent UCL mean concentration, DTSC recommends using the U.S. EPA software, ProUCL, version 4.0 or most current version (U.S. EPA 2007a, b), available through links on the U.S. EPA website, “Technical

Support Center for Monitoring and Site Characterization," at <http://www.epa.gov/esd/tsc/TSC_form.htm>.

This software enables the user to calculate the 95 percent UCL mean concentration using a variety of methods dependent upon the actual data distribution. This software also allows the estimation of confidence limits for non-normal or unknown data distributions.

For chemicals which were 1) treated or stored on-site; 2) which are suspected to have been spilled or released on-site; or 3) have degradation products on-site, but sampling data indicate the chemical is below the detection limit (practical quantitation limit for that chemical), then half the detection limit should be used as the exposure point concentration for that chemical.

4.9.2.3.3 Indoor Air Evaluation

If volatile organic compounds (VOCs) are present in the subsurface at a site, the vapor intrusion pathway should be evaluated, in addition to other pathways identified in this guidance document. The DTSC recommends a step-wise approach as defined in the *Guidance for the Evaluation of Subsurface Vapor Intrusion to Indoor Air* (DTSC 2005c). For sites with proposed buildings, steps 1 through 3, 5, 6, 7 and 11 apply. For sites with existing buildings, Steps 1 through 11 apply. The following summarize each of these steps.

- **Step 1:** Identify the spills or releases.
- **Step 2:** Characterize the site, preferably analyzing for soil gas where VOC contamination is suspected.
- **Step 3:** If VOCs are detected on-site, the site can be identified as one where vapor intrusion may represent a complete exposure pathway.
- **Step 4:** For an existing building, determine if an immediate threat to human health exists from vapor migration.
- **Step 5:** Perform a screening indoor air risk evaluation using:
  - the provided attenuation factors;
  - soil gas CHHSLs; or
  - calculating indoor air risks using the DTSC-modified Johnson and Ettinger (J&E) Model with default parameters.
- **Step 6:** Collect additional site data (e.g., site-specific physical parameters).
- **Step 7:** Perform a refined modeling evaluation using the DTSC-modified J&E Model incorporating the site-specific physical parameters and building parameters, as appropriate.
- **Step 8:** For an existing building, prepare an Indoor Air Quality (IAQ) Assessment Workplan, which includes an assessment of utility corridors (preferential flowpaths), a decision logic for evaluating IAQ data collected, inclusion of a contingency plan for necessary response actions and a community outreach plan.
- **Step 9:** For an existing building, conduct IAQ sampling.

- **Step 10:** For an existing building, evaluate the IAQ data collected to determine the acceptability of indoor air concentrations. If the IAQ results are unacceptable, go to Step 11a.
- **Step 11a:** For an existing building, mitigate indoor air exposure, implement appropriate engineering controls and remediate VOC contamination.
- **Step11b:** For future buildings, if the estimate indoor air risk is unacceptable, remediate subsurface VOC contamination or implement engineering controls during the building construction .
- **Step 11c:** For both the existing and future situations, institute long-term monitoring as part of an O&M Plan.

Specific sampling requirements are presented in detail in the following guidance documents:

- *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air* (DTSC 2005c). The current version is available through links on the DTSC website, "Assessing Risk" at <http://www.dtsc.ca.gov/AssessingRisk/index.cfm>.
- *Advisory – Active Soil Gas Investigations* (DTSC/LARWQCB, 2003). The current version is available through links on the DTSC website,"Evaluating and Cleaning-up School Sites," at < http://www.dtsc.ca.gov/Schools/index.cfm>.

Indoor air is are also discussed in Section 4.9.5.3.3.

4.9.2.4 TOXICITY VALUES

The hierarchy of toxicity values that should be used in the PEA screening risk assessment is as follows:

1. Cancer potency factors (slope factors or unit risk factors) or chronic non-cancer toxicity criteria (reference doses or reference exposure levels, including child-specific reference doses) promulgated into California regulations.

2. Cancer potency factors developed by Cal/EPA's Office of Environmental Health Hazard Assessment (OEHHA) http://www.oehha.ca.gov/risk/ChemicalDB/index.asp.

3. Toxicity values used to develop environmental criteria promulgated into California regulations. This refers to toxicity values used in deriving "No Significant Risk Levels" and "Maximum Allowable Dose Levels" under the State's Safe Drinking Water and Enforcement Act of 1986 (Proposition 65), or in deriving State drinking water Maximum Contaminant Levels. The health-based dose criteria, not the resulting risk management environmental concentration criteria should be used to estimate risk.

4. USEPA's Integrated Risk Information System (IRIS) http://www.epa.gov/iriswebp/iris/index.html.

5. The most recent edition of the USEPA Region IX Preliminary Remediation Goals (PRG) table (http://www.epa.gov/region09/waste/sfund/prg/index.html).

6. U.S. EPA Provisional Peer Reviewed Toxicity Values (PPRTVs): The Office of Research and Development/National Center for Environmental Assessment/Superfund Health Risk Technical Support Center (STSC) develops PPRTVs on a chemical-specific basis when requested by the U.S. EPA Superfund program.

7. USEPA's Health Effects Assessment Summary Tables (HEAST). As of the publication date of this PEA guidance the most recent version of HEAST was published in 1997.

For inhalation pathways, an inhalation reference exposure level (REL, OEHHA) or reference concentration (RfC, USEPA IRIS XXXX) should be used when available.

When an inhalation toxicity criterion is not available for a compound, the oral toxicity criterion can be used. Significant uncertainty may be introduced, however, when the toxicity is not the same (e.g., portal of entry effects) or when there are differences in absorption. Therefore, DTSC should be consulted before taking this step.

Oral cancer slope factors and chronic non-cancer toxicity criteria can be used as surrogate values to estimate systemic toxicity as a result of dermal absorption of a chemical, because dermal toxicity values are not available. See Table 4-2 below for dermal absorption factors. Use of oral cancer slope factors or chronic non-cancer toxicity criteria does not correct for differences in absorption and metabolism between the oral and dermal routes. Also, direct toxic effects on the skin are not accounted for. Thus, the use of an oral cancer slope factor or chronic non-cancer toxicity criteria for evaluating exposure via the skin may lead to an underestimation or an overestimation of the risk or hazard, depending on the compound. However, this is not generally expected to significantly underestimate the risk or hazard relative to the other routes of exposure evaluated in this risk assessment screening procedure.

Each COPC should be listed in a summary table (Table 4-3) with the cancer slope factor and reference dose for each COPC and each route of exposure. The table should reference the source (e.g., Cal/EPA, IRIS, HEAST, USEPA Region IX PRG Tables) and date of the toxicity values. This section should also indicate which toxicity values are based on route-to-route extrapolation.

Table 4-2 Dermal Absorption Factors (ABS)

From: PEA, DTSC, (Second Printing, June 1999), Page A-6, Table 2

Compound Class	Absorption Fraction [1]	References	EPA Dermal Guidance [2]
Chlorinated insecticides	0.05	Wester, et al., 1990a; Wester, et al., 1992a	DDT 0.03 Chlordane 0.04 Lindane 0.04
Polynuclear Aromatic Hydrocarbons	0.15	Wester, et al., 1990a	Benzo[a]pyrene: 0.13
Organophosphates	0.25	OEHHA, Cal/EPA	
Pentachlorophenol	0.25	Wester, et al., 1993b	
Polychlorinated Dibenzo-p-dioxins and Dibenzofurans	0.03	USEPA 1992	(if organic soil content > 10%)
Polychlorinated Biphenyls (PCB)	0.15	Wester et al., 1993c	0.14
Other organic chemicals	0.10	SCAQMD, 1988	
Cadmium	0.001	Wester, et al., 1992b	
Arsenic	0.03	Wester, et al., 1993a	
Hexavalent chromium	0%	Not shown to be a systemic carcinogen via dermal exposure	
Other metals and complexed cyanides	0.01	SCAQMD, 1988	
Free cyanide	0.10	SCAQMD, 1988	
Semi-Volatile Organic Compounds			Semi-volatile organic compounds 0.1

[1] Dermal absorption values from soil are based on, in order of preference: in vivo, animal studies on dermal absorption from soil; in viva, animal studies on dermal absorption from an applicable cosolvent; in vitro, human skin dermal absorption studies; in vitro, animal skin dermal absorption studies. Actual dermal absorption from soil may vary from these estimates due to exposure conditions or soil characteristics which differ from the experimental conditions.

[2] Risk Assessment Guidance for SuperfundVolume I: Human Health Evaluation Manual (Part E, Supplemental Guidance for Dermal Risk Assessment), USEPA, July 2004

Table 4-3
Summary of Hazard Index and Cancer Risks

	Exposure Point Concentrations				Toxicity Values								Hazard Index (HI)			Estimated Cancer Risk		
Chemical (COPC)	Soil	Ambient Air*	Indoor Air**	ABS	Rererence Dose (mg/kg-day)				Slope Factor (mg/kgday)$^{-1}$				Soil	Air	All Pathways	Soil	Air	All Pathways
	(mg/kg)	(mg/m^3)	(mg/m^3)	(Unitless)	Inhalation	Source	Oral	Source	Inhalation	Source	Oral	Source	HI	Hi	Hi	Risk	Risk	Risk
Inorganic Compounds																		
Metals																		
Non-Volatile Organic Compounds																		
Pesticides																		
PCB																		
PAHs																		
PCB																		
TPHd,o																		
Other SVOCs																		
Volatile Organic Compounds																		
BTEX																		
Naphthalene																		
DBCP																		
Other VOCs																		
Cumulative Total																		

Notes:
If water is a potential exposure pathway on the site it should be included in the hazard analysis and risk calculations by using the appropriate toxicity criteria for ingestion and/or dermal absorption.

*For Ambient Air criteria use current California (Air Resources Board) recommendations.

**Indoor Air health evaluation should be performed using soil vapor data analyzed by the Johnson-Ettinger (J/E) Indoor Air Vapor Intrusion Model which can be found on the DTSC web site at http://www.dtsc.ca.gov/AssessingRisk/JE_Models.cfm. If groundwater is a potential source of indoor air vapor intrusion, the groundwater screening version of the J/E model should also be included in the risk assessment.

If the California Human Health Screening Levels (CHHSLs) calculator is used to estimate risk, appropriate reference should be included in a footnote. CHHSLs should only be used for risk assessment if all COPCs have a CHHSL

4.9.3 California Human Health Screening Levels

California Human Health Screening Levels (CHHSLs) are soil and/or soil gas concentrations for selected chemicals that the California Environmental Protection Agency has developed with a target threshold of a 1 x 10^{-6} risk for carcinogens, and a hazard quotient of 1.0 for non-carcinogens. They were developed using models and exposure assumptions similar to those which are found in this guidance. A full description of the methods and assumptions used in developing the CHHSLs may be found at http://www.calepa.ca.gov/Brownfields/SB32.htm.

Residential CHHSLs may be used as a screening tool at school sites if:

- CHHSLs are available for all COPCs, and
- The exposure pathways are limited to incidental soil ingestion, dermal absorption, and inhalation of dusts in outdoor air for non-volatile soil-bound chemicals, and the inhalation of indoor air pathway for volatile organic compounds (VOCs).

If the conceptual model for the site includes a drinking water pathway then the CHHSLs may not be used since this pathway is not included in the CHHSL calculations. The use of the CHHSLs may be limited in some circumstances since they do not take into consideration the leaching of contaminants from soil to groundwater and they do not consider ecological receptors. CHHSLs are also not applicable for lead, which should be should be evaluated using the most current DTSC LEADSPREAD Model or the school site lead screening level of 255 mg/kg. With the exception of dioxin (PCDD/PCDF), CHHSLs are not applicable for the compounds listed in Section 4.9.8.

For those sites where the COPCs include chemicals for which CHHSLs are not available, the risk analyses should be completed using the PEA Risk Assessment process in Section 4.9.5.

To use CHHSLs, the maximum detected concentration of a chemical should be compared to the most recent CHHSL which can be found at the following web site:
http://www.calepa.ca.gov/Brownfields/SB32.htm
The total risk and hazard for a single or multiple chemicals should be calculated using traditional additive methodologies, or by using the on-line calculator at http://www.calepa.ca.gov/Brownfields/SB32.htm. The print out of the calculation sheet should be included in the risk assessment document or the summary table (Table XX) may be used to summarize the information.

4.9.4 SchoolScreen Model

In addition to the unrestricted scenario, the school district may elect to include a separate set of health risk assessment calculations according to the intended use of the school using the CalEPA/OEHHA SchoolScreen Model (OEHHA 2004). Using this school-based model use allows for the evaluation of risk to students on a yearly basis, and risks to staff assuming 40 year exposure duration. In addition, pregnant and nursing women are considered, nursing infants (in daycare at the school site, less than 1 year

old) and pre-school aged children (in daycare at the school site, 1 through 4 years old). The age groupings for the proposed school must be presented in the workplan and must be approved by DTSC.

Cal-EPA OEHHA has published the *Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites* (OEHHA, 2004) and associated SchoolScreen Spreadsheet to address these age and school specific exposures: http://www.oehha.ca.gov/public_info/public/kids/schools2604.html.

DTSC uses portions of this SchoolScreen Guidance for the SEAM evaluation, while other state entities may use other portions of the OEHHA guidance for their evaluation of school sites for CEQA and other regulatory processes. Currently, only the screening mode (Tier 1) of the SchoolScreen Spreadsheet is used for DTSC school site evaluations.

Use of the SchoolScreen Model may increase the permissible concentrations of COPCs on site, since the exposure parameters are not equivalent to residential exposure parameters. Therefore, a DTSC determination for a site, based on SchoolScreen data, is specific for the evaluated school type and for this type only. Changes in the type of school may require a new evaluation and approval from DTSC. Furthermore, leaving hazardous materials in place could result in the need for additional controls, including restrictions in the use of the property (deed restriction/land use covenant), engineering controls and/or long-term operation and maintenance of the site. The building air exchange rate in the SchoolScreen Spreadsheet is greater than the residential exposure scenario using the DTSC-modified Johnson & Ettinger spreadsheet. The increased air exchanges in the SchoolScreen may be an assumed engineering control which mitigates potential exposures to students and staff. In some cases, additional operation and maintenance agreements may be required to ensure the continued mitigation of indoor air vapor migration.

DTSC uses the SchoolScreen Spreadsheet developed by OEHHA (revised in 2006) for evaluation of school-based scenarios. SchoolScreen was extensively reviewed by DTSC and the public before OEHHA finalized this approach. School districts/consultants who elect to develop their own school-based scenarios may encounter additional costs both in the development and in DTSC review. A thorough review of all new models is required by DTSC. If the school district elects to use a different school-based model, it must be clearly state in the document and supporting materials must be provided.

4.9.5 PEA Human Health Risk Assessment

The PEA Human Health Risk Assessment is for the most part identical to the risk assessment portion of the Preliminary Endangerment Assessment Manual (DTSC 1999) with a few additions. This risk assessment model is based on USEPA RAGS Part A and E (USEPA 1989, 2004), and uses well accepted and standard approaches to assessing risk.

The screening risk evaluation produces an estimate of risk, and/or a hazard index, for water, soil, and air for each compound at a site. The excess lifetime cancer risk for carcinogenic compounds (termed "$Risk_i$" where "i" is the medium of exposure (water, soil, air)) is estimated for those compounds considered to pose a carcinogenic risk to humans as determined by CalEPA and, for some compounds, by the USEPA. This value represents the risk, or theoretical probability, of developing cancer from a chemical upon exposure to it in media (soil, air, water). The hazard index (termed "$Hazard_i$" where "i" is the medium of exposure), is calculated for all compounds, including carcinogens (carcinogenic compounds have non-carcinogenic toxicity). It is the ratio of the estimated dose from exposure to compounds in a medium, to a value that is believed not to produce adverse health effects. It is not a probability.

The equations listed in Figures 4-2 through 4-9 are used for estimating the risk and hazard index, and include a simplified equation that incorporates the current default exposure values to achieve a reasonable maximum estimation of exposure in a residential setting. These are the primary equations to be used for calculating the risk and hazard for each exposure medium (water, soil, and outdoor air). The equations for cancer risk and the non-cancer hazard index use the same default exposure factors, except for the averaging time. The averaging time is 70 years for cancer risk, and is equal to 6 years for the hazard index to be consistent with the exposure duration for non-carcinogenic hazards for a child, which is the receptor with the greatest estimated exposure. The risk/hazard equations were simplified to a pathway exposure factor and three variables: the chemical-specific toxicity value, the concentration of the chemical in the medium, and a dermal absorption term.

Although equations are provided for evaluating ingestion and dermal exposure to water, most school PEAs do not need to include this pathway because water is supplied by a municipal water source, rather than on-site wells. However, this pathway is evaluated if the current or proposed school property will use on-site groundwater, or if there has been a release on the school property that has contaminated the site groundwater. If in the latter circumstance the groundwater flows offsite then offsite receptors may need to be evaluated as well.

The air exposure pathway consists of both outdoor and indoor air. In general VOCs are evaluated in indoor air only, and non-VOCs are evaluated in outdoor air only. The indoor air pathway is evaluated when there are VOCs in groundwater and/or soil gas. Details on how to obtain the necessary data for a human health risk evaluation of this pathway can be obtained from *DTSC's Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air, Interim Final, December 15, 2004* (DTSC, 2004) (Section 4.9.2.3.3). Once the data are obtained the evaluation should be performed using DTSC's modified version of the Johnson & Ettinger (J&E) model for evaluating subsurface vapor intrusion into buildings. Groundwater may also need to be evaluated via the indoor air pathway if it is contaminated with VOCs (see Sections 10.2.3.3 and 10.5.3.3 for further discussion of indoor air migration).

4.9.5.1 WATER EXPOSURE PATHWAYS

If water is an exposure pathway for the site, use the equations in Figures 4-2 to 4-5 to calculate the risk and hazard index from this pathway. The risk calculated is a summation of ingestion exposure, dermal exposure, and exposure from inhalation of VOCs released from water used indoors, for the child and adult. However, the hazard index is calculated for the first 6 years of childhood only. These equations do not include exposure from ingestion of aquatic organisms in surface water.

FIGURE 4-2 Derivation of Hazard Index Equation for non-VOCs in Water

Basic Equation:

$$\text{Hazard index}_{\text{nonvoc, water}} = (1/RfD_o) \times C_w \times \frac{IR_w \times EF \times ED_{child}}{BW \times AT \times 365 \text{ days/year}}$$

$$+ (1/RfD_o) \times C_w \times \frac{SA \times K_p \times ET \times EF \times ED \times (1L/1000cm^3)}{BW \times AT \times 365 \text{ days/year}}$$

Default Exposure Factors:

BW = body weight (15 kg-child)
AT = averaging time (6 years)
EF = exposure frequency (350 days/year)
ED = exposure duration (6 years-child)
IR_w = intake rate (1 L/day-child)
ET = exposure time during bathing (child- four 15 min. baths/week = 0.14 hr/day)
SA = skin surface area available for contact (7,200 cm^2-child)
K_p = chemical-specific dermal permeability coefficient from water (cm^2/hour)
C_w = concentration of chemical in water (mg/L)

Reduced Equation:

$$\text{Hazard index}_{\text{nonvocwater}} = [(C_w/RfD_o) \times 0.639] + [(C_w/RfD_o) \times 0.0644 \times K_p]$$

FIGURE 4-3: Derivation of Hazard Index Equation for VOCs in Water

Basic Equation:

$$\text{Hazard index}_{\text{voc, water}} = (1/\text{RfD}_o) \times C_w \times \frac{IR_w \times EF \times ED_{child}}{BW \times AT \times 365 \text{ days/year}}$$

$$+ (1/\text{RfD}_o) \times C_w \times \frac{SA \times K_p \times ET \times EF \times ED \times (1\text{L}/1000\text{cm}^3)}{BW \times AT \times 365 \text{ days/year}}$$

$$+ \text{Hazard index}_{\text{J\&Emodel}}$$

Default Exposure Factors:

BW = body weight (15 kg-child)
AT = averaging time (6 years)
EF = exposure frequency (350 days/year)
ED = exposure duration (6 years-child)
IR_w = intake rate (1 L/day-child)
ET = exposure time during bathing (four 15 min. baths/week = 0.14 hr/day-child)
SA = skin surface area available for contact (7,200 cm^2-child)
K_p = chemical-specific dermal permeability coefficient from water (cm^2/hour)
C_w = concentration of chemical in water (mg/L)

Reduced Equation:

$$\text{Hazard index}_{\text{water}} = [(C_w/\text{RfD}_o) \times 0.639] + [(C_w/\text{RfD}_o) \times 0.0644 \times K_p] + \text{Hazard index}_{\text{J\&Emodel}}$$

FIGURE 4-4: Derivation of Risk Equation for non-VOCs in Water

Basic Equation:

$$Risk_{nonvoc,\ water} = SF_o + C_w \times \frac{IR_w \times EF \times ED_{adult}}{BW_{adult} \times AT \times 365\ days/year}$$

$$+ SF_o + C_w \times \frac{IR_w \times EF \times ED_{child}}{BW_{child} \times AT \times 365 days/year}$$

$$+ SF_o \times C_w \times \frac{SA_{adult} \times K_p \times ET \times EF \times ED \times (1L/1000\ cm^3)}{BW_{adult} \times AT \times 365\ days/year}$$

$$+ SF_o \times C_w \times \frac{SA_{child} \times ET \times EF \times ED_{child} \times (1L/1000\ cm^3)}{BW_{child} \times AT \times 365\ days/year}$$

Default Exposure Factors:

BW = body weight (70 kg-adult; 15 kg-child)
AT = averaging time (70 years)
EF = exposure frequency (350 days/year)
ED = exposure duration (24 years-adult; 6 years-child)
IR_w = ingestion rate (2 L/day-adults; 1 L/day-child)
ET = exposure time during bathing (15 min/shower=0.25 hr/day-adult; four 15 min. baths/week = 0.14 hr/day-child)
SA = skin surface area available for contact (23,000 cm^2-adult; 7,200 cm^2-child)
K_p = chemical-specific dermal permeability coefficient from water (cm^2/hour)
C_w = concentration of chemical in water (mg/L)

Reduced Equation:

$$Risk_{water} = (SF_o \times C_w \times 0.0149) + (SF_o \times C_w \times 0.0325 \times K_p)$$

FIGURE 4-5: Derivation of Risk Equation for VOCs in Water

Basic Equation:

$$Risk_{voc,\ water} = SF_o + C_w \times \frac{IR_w \times EF \times ED_{adult}}{BW_{adult} \times AT \times 365\ days/year}$$

$$+ SF_o + C_w \times \frac{IR_w \times EF \times ED_{child}}{BW_{child} \times AT \times 365 days/year}$$

$$+ SF_o \times C_w \times \frac{SA_{adult} \times K_p \times ET \times EF \times ED \times (1L/1000\ cm^3)}{BW_{adult} \times AT \times 365\ days/year}$$

$$+ SF_o \times C_w \times \frac{SA_{child} \times ET \times EF \times ED_{child} \times (1L/1000\ cm^3)}{BW_{child} \times AT \times 365\ days/year}$$

$$+ Risk_{J\&Emodel}$$

Default Exposure Factors:

BW = body weight (70 kg-adult; 15 kg-child)
AT = averaging time (70 years)
EF = exposure frequency (350 days/year)
ED = exposure duration (24 years-adult; 6 years-child)
IR_w = ingestion rate (2 L/day-adults; 1 L/day-child)
ET = exposure time during bathing (15 min/shower=0.25 hr/day-adult; four 15 min. baths/week = 0.14 hr/day-child)
SA = skin surface area available for contact (23,000 cm^2-adult; 7,200 cm^2-child)
K_p = chemical-specific dermal permeability coefficient from water (cm^2/hour)
C_w = concentration of chemical in water (mg/L)

Reduced Equation:

$$Risk_{water} = (SF_o \times C_w \times 0.0149) + (SF_o \times C_w \times 0.0325 \times K_p) + Risk_{J\&Emodel}$$

4.9.5.2 SOIL EXPOSURE PATHWAYS

Use the equations in Figures 4-6 and 4-7 to calculate the risk and hazard index for the soil pathway. The risk calculated is a summation of the risk from incidental soil ingestion and dermal exposure for a child and an adult. The hazard index is calculated only for the first 6 years of childhood. The equations do not include exposure from ingestion of homegrown fruits and vegetables, or products from animals (e.g., meat, milk, eggs) that

feed on vegetation grown on contaminated soil. Inhalation of fugitive dust from the site is considered in Section 4.9.5.3.

FIGURE 4-6 Derivation of Hazard Equation for Soil

Basic Equation:

$$\text{Hazard index}_{soil} = (1/RfD_o) \times C_s \times \frac{IR_{s,child} \times EF \times ED_{child} \times 10^{-6}\ kg/mg}{BW_{child} \times AT \times 365\ days/year}$$

$$+ (1/RfD) \times C_s \times \frac{SA_{child} \times AF \times ABS \times EF_{child} \times ED_{child} \times 10^{-6}\ kg/mg}{BW_{child} \times AT \times 365\ days/year}$$

Default exposure factors (based on childhood exposure from birth to six years:

BW = body weight (15 kg-child)
AT = averaging time (6 years)
EF = exposure frequency for soil ingestion and dermal contact (350 days/year)
ED = exposure duration (6 years-child)
IR_s = incidental soil ingestion rate (200 mg/day-child)
SA = exposed skin surface area (2900 cm^2-child)
AF = soil to skin adherence factor (0.2 mg/cm^2-child)
ABS = fraction of chemical absorbed from soil
C_s = concentration of chemical in soil (mg/kg)

Reduced Equation:

$$\text{Hazard index}_{soil} = [(C_s/RfD) \times 1.28 \times 10^{-5}] + [(C_s/RfD) \times 3.70 \times 10^{-5} \times ABS]$$

FIGURE 4-7: Derivation of Risk Equation for Soil

Basic Equation:

$$Risk_{soil} = SF_o \times C_s \times \frac{IR_{s,adult} \times EF \times ED_{adult} \times 10^{-6}\ kg/mg}{BW_{adult} \times AT \times 365\ days/year}$$

$$+ SF_o \times C_s \times \frac{IR_{s,child} \times EF \times ED_{child} \times 10^{-6}\ kg/mg}{BW_{child} \times AT \times 365\ days/year}$$

$$+ SF_o \times C_s \times \frac{SA_{adult} \times AF \times ABS \times EF_{adult} \times ED_{adult} \times 10^{-6}\ kg/mg}{BW_{adult} \times AT \times 365\ days/year}$$

$$+ SF_o \times C_s \times \frac{SA_{child} \times AF \times ABS \times EF_{child} \times ED_{child} \times 10^{-6}\ kg/mg}{BW_{child} \times AT \times 365\ days/year}$$

Default exposure factors:

BW = body weight (70 kg-adults, 15 kg-child)
AT = averaging time (70 years)
EF = exposure frequency for soil ingestion (350 days/year)
EF = exposure frequency (350 days/year)
exposure frequency for dermal contact (2 events/wk (100 days/yr)-adult; 7 events/week (350 days/yr)-child
ED = exposure duration (24 years-adult, 6 years-child)
IR_s = incidental soil ingestion rate (100 mg/day-adult, 200 mg/day-child)
SA = exposed skin surface area (5700 cm^2-adult, 2900 cm^2-child)
AF = soil to skin adherence factor (0.07 mg/cm^2-adult, 0.2 mg/cm^2-child)
ABS = fraction of chemical absorbed from soil
C_s = concentration of chemical in soil (mg/kg)

Reduced Equation:

$Risk_{soil} = (SF_o \times C_s \times 1.57 \times 10^{-6}) + (SF_o \times C_s \times 3.7 \times 10^{-6} \times ABS)$

4.9.5.3 AIR EXPOSURE PATHWAYS

The risk and hazard index for the air pathway are based on either the exposure to volatile emissions for VOCs and/or the exposure to fugitive dust emissions for non-VOCs. A VOC is a chemical with a vapor pressure of 0.001 mm Hg or higher and a Henry's Law constant of 1 x 10^{-5} or higher. DTSC has performed extensive modeling of

dusts and VOCs and results have shown that using either volatilization or fugitive dust adequately describes exposure to a chemical; it is not necessary to evaluate a COPC for both dust and volatile air exposure pathways.

The risk and hazard equations for VOCs and non-VOCs are presented in Figures 4-8 and 4-9. The estimated risk is based on childhood and adult exposure. The hazard index is calculated only for the first 6 years of childhood. Air monitoring data generally are not needed for this screening evaluation, but are useful for worker health and safety monitoring and fenceline monitoring for non-occupational receptors during removal actions.

FIGURE 4-8 Derivation of Hazard Equation for Air

Basic Equation:

$$\text{Hazard Index}_{air} = \frac{1}{\text{RfC or REL}} \times C_a \times \frac{EF \times ED_{child} \times ET \times \frac{1\,day}{24\,hours}}{AT \times 365\ days/year}$$

Default exposure factors (based on childhood exposure from birth to six years):

RfC or REL = Reference concentration or reference exposure level (mg/m^3)
C_a = Concentration in air (mg/m^3)
EF = Exposure frequency (350 days/year)
ED_{child} = Child exposure duration (6 years)
ET = Exposure time (24 hours/day)
AT = Averaging time (6 years)

Reduced Equation:

$\text{Hazard Index}_{air}$ = 1/(RfC or REL)] x Ca x 0.959

FIGURE 4-9 Derivation of Risk Equation for Air

Basic Equation:

$$Risk_{air} = URF_i \times 1000\ ug/mg \times Ca \times \frac{EF \times ED_{adult\ +\ child} \times ET \times \frac{1\,day}{24\,hours}}{AT \times 365\ days/year}$$

Default exposure factors:

URFi = Inhalation unit risk factor $(ug/m^3)^{-1}$
C_a = Concentration in air (mg/m^3)
EF = Exposure frequency (350 days/year)
$ED_{adult\ +child}$ = Exposure duration for resident (30 years total)
AT = Averaging time (70 years)

Reduced Equation:

$Risk_{air} = URF_i \times C_a \times 411$

4.9.5.3.1 Particulates

Non-VOCs, including semi-volatile organic compounds and metals, should be evaluated in outdoor air using particulate emission factors (PEFs). The fugitive dust model used in this guidance document is not applicable for areas where the air quality standard of 50 $\mu g/m^3$ for particulates (California Ambient Air Quality Standard (CAAQS) for the respirable portion (PM_{10}) of suspended particulate matter, 24-hour average is routinely exceeded, nor is it applicable for assessing fibers such as asbestos.

PEFs are used to develop an estimate of the concentration of a COPC in dust based on its concentration in soil. It assumes that the dust from the site is caused by the wind and not created by mechanical means (e.g. construction activities, tilling, automobile traffic, etc.). A default PEF of 1.32E09 m^3/kg should be used. This is the same default value used by USEPA Region IX in setting their PRGs and by USEPA in their Soil Screening Guidance. It assumes an infinite source of COPCs, a vegetative cover of 50%, and a mean annual wind speed of 4.69 m/s. This is equivalent to a concentration of 0.76 $\mu g/m^3$ at the receptor. The default dispersion term (Q/C) of 90.80 (g/m^2-s per kg/m^3) is based on a site of 0.5 acres and dispersion modeling runs of 29 sites across the U.S. The default QC was chosen because it is thought to provide a conservative estimate of the long-term exposure to dust. Q/Cs that are more site-specific may be used if they can be shown to be applicable for estimation of long-term exposure to dust at a site.

Figure 4-10 provides an equation for estimating COPC concentrations in air as suspended soil particulates.

FIGURE 4-10 Estimation of Air Concentration for Non-VOCs

$$C_a = \frac{C_s}{PEF}$$

Where,

C_a = Chemical Concentration in Air, mg/m^3

C_s = Maximum Reported Soil Concentration, mg/kg

PEF = Particulate Emission Factor (default $= 1.32E+09\ m^3/kg$)[a]

$$= Q/C \times \frac{3600\ sec/hr}{0.036 \times (1-V) \times (Um/Ut)3 \times F(x)}$$

Where,

Q/C = Inverse of mean concentration at the center of a 0.5-acre-square source (default $= 90.80\left(g/m^2\text{-}sec / kg/m^3\right)$)

V = Fraction of vegatative cover (default = 0.5 or 50%)

Um = Mean annual wind speed (default = 4.69 m/sec)

Ut = Equivalent threshold value of windspeed at 7 m (default = 11.32 m/sec)

F(x) = Function dependent on Um/Ut (default = 0.194)

USEPA Supplemental Guidance for Developing Soil Screening Levels for Superfund Sites, December 2002

4.9.5.3.2 VOC Vapor – Outdoor

Although there may be exposure to VOCs in the outdoor air this pathway is insignificant compared to the indoor air pathway in most school based PEA risk assessments. Therefore, for most projects, the VOC outdoor pathway does not need to evaluated. For the very occasional instance that VOCs in outdoor air need to be evaluated, this should be done using soil gas data evaluated using methods presented in *Estimation of Baseline Emissions at Superfund Sites (EPA-450/1-89-002a),* which is part of the EPA National Technical Guidance Series (NTGS) Air Superfund Series.

4.9.5.3.3 VOC Vapor – Indoor

VOCs in air are generally the result of volatilization of compounds generated from contaminated soils (soil gas) or groundwater. The risk evaluation of VOCs in soil gas or groundwater should be performed using the indoor air vapor intrusion model.

DTSC recommends that the USEPA version of the Johnson & Ettinger (J&E) Model be used to evaluate the presence of VOCs in indoor air. DTSC has modified the soil gas and groundwater versions of USEPA J&E Model by including California-specific toxicity factors. These DTSC-modified J&E Models can be downloaded from DTSC's website at

http://www.dtsc.ca.gov/AssessingRisk/index.cfm. However, these spreadsheets should always be checked to make sure that the toxicity values have been updated.

A screening evaluation of potential indoor air risks should first be conducted using the DTSC-modified J&E Model and the following default physical parameters:

- Soil gas or groundwater concentration = maximum reported concentration
- Depth below-grade to bottom of enclosed floor space = 15 cm for slab on grade or 200 cm for basement structure
- Average soil temperature = 24^{o}C
- Vadose zone soil vapor permeability = 1E-08 cm^2
- Vadose zone soil type = sand (S) with the following associated, default physical parameters
    - Dry bulk density = 1.66 g/cm^3
    - Total porosity = 0.375
    - Water-filled porosity = 0.054 cm^3/cm^3
- Average vapor flow rate into building (Q_{soil}) = 5 L/min

Site specific physical soil properties can be estimated using the site boring logs taken from the continuously cored samples on-site in consultation with DTSC. Alternatively, soil samples can be collected for laboratory analysis of site-specific physical properties. A sufficient number of soil samples should be collected to be truly representative of site lithology and to allow for a minimal statistical evaluation of the data. If site specific soil parameters are used, they must be reported in the text of the document for DTSC verification.

4.9.6 Summary of Risk and Hazard for All Media

TABLE XXX SUMMARY OF RISK/HAZARD

For cancer risk, sum risks from each carcinogen over all exposure media then sum all carcinogens to obtain the total excess lifetime cancer risk posed by all the COPCs at the site. For hazard, sum the hazard quotients from each compound over all exposure media and then sum all chemicals to obtain the total hazard index posed by the COPCs at the site. If this hazard index is greater than 1, an additional option may be selected which allows for the recalculation of the hazard index by segregating the chemicals according to common toxic manifestations or effects on the same target organ. The DTSC toxicologist should be consulted for guidance in grouping compounds by health effects endpoints.

In general, a risk estimation greater than 1 x 10^{-6} or a hazard index greater than 1 indicate the presence of contamination which may pose a significant threat to human health. Exceptions will generally include sites with elevated background concentrations, sites where other agency criteria are more stringent, and sites with specific circumstances that allow for a risk management decision to elevate the acceptable screening levels. In cases where SchoolScreen is used for risk estimation and chemicals left in place exceed acceptable levels according to an unrestricted or residential scenario, DTSC may require a land-use covenant, an on-going operation and

maintenance (O&M) agreement, or other controls. All potential scenarios should be discussed with DTSC prior to selection of the most applicable for the site.

4.9.7 Uncertainty Analysis

As an option, the PEA report may contain a section qualitatively discussing uncertainties in the human health screening evaluation. This discussion should not debate the validity of the default exposure factors since such factors are generic to assumed behavioral and physiological factors appropriate for humans in a residential setting (e.g., soil ingestion rates for a child). The uncertainty section instead should focus on specific site conditions which contribute most significantly to uncertainty in the risk and hazards estimates. Reliance on the information presented in the uncertainty analysis to decide "no further action", when the screening evaluation estimates risk greater than 10^{-6} or a hazard index greater than 1, warrants discussions with DTSC.

A quantitative or stochastic uncertainty analysis should not be presented, as such analysis is beyond the scope of a screening evaluation, and is more appropriate in a full baseline risk analysis.

4.9.8 Special Considerations for Selected Chemicals

The following sections discuss special chemicals or families of chemicals that require additional consideration in the risk assessment process.

4.9.8.1 DIOXINS AND FURANS

Polychlorinated dibenzo-p-dioxins and dibenzofurans (PCDD/PCDF) are often ubiquitous and present in ambient concentrations in most developed areas due to the widespread air dispersion during combustion activities.

PCDDs and PCDFs are highly carcinogenic compounds formed in the combustion of coal/petroleum products, and especially the combustion of PVC plastics and other chlorine containing compounds in municipal/hospital incinerators, backyard trash fires and landfill fires. PCDDs are also contaminants of agent orange herbicide, pentachlorophenol and sewage sludge. The majority of human dioxin exposure is thought to come from the above emissions contaminating animal products (meat, milk, fish, etc) through aquatic and terrestrial food chains. Nevertheless, direct exposure from environmental media is a concern at sites with elevated levels of PCDDs and PCDFs. Assume unspeciated PCDD/PCDF are equivalent in cancer potency to 2,3,7,8-tetrachloro-dibenzo-p-dioxin (2,3,7,8-TCDD). Ideally, congeners should be speciated and evaluated in the risk assessment using the World Health Organization (WHO) toxicity equivalency factors (TEFs) for dioxins and dioxin-like compounds. A table of the TEFs may be found at www.who.int/ipcs/assessment/tef_update. The total dioxin-like TEF should be used as the dioxin concentration in the risk assessment using the toxicity criteria for 2,3,7,8-TCDD. Ambient levels of dioxins may be considered in the risk assessment approach; however, DTSC should be consulted before using this approach.

4.9.8.2 POLYAROMATIC HYDROCARBONS (PAHS)

For carcinogenic polycyclic aromatic hydrocarbons (PAHs), the benzo(a)pyrene potency equivalent (B(a)P-Equivalent) concentration should be calculated for each soil sample.

Benzo(a)pyrene potency equivalency factors, which were developed by OEHHA (OEHHA 2005), are listed in Table 4-4.

Polyaromatic hydrocarbons (PAHs) are often ubiquitous and present in ambient concentrations in most developed areas due to the widespread air dispersion during combustion activities. Because of the multiple source and widespread distribution of low levels of PAHs, ambient levels of PAHs may be considered in the risk assessment. DTSC should be consulted for appropriateness of regional studies on ambient PAHs. For some cases, the comparison of site B(a)P-Equivalents to ambient concentrations may result in eliminating sporadic carcinogenic PAHs from inclusion as COPCs. Noncarcinogenic PAHs should always be included as COPCs and evaluated in the human health screening evaluation.

TABLE 4-4 POTENCY EQUIVALENCY FACTORS (PEFs) FOR PAHs

Chemical Name	Slope Factor		Potency Equivalency Factors
	Oral	Inhalation	
Benzo[a]anthracene			0.1
Benzo[b]fluoranthene			0.1
Benzo[j]fluoranthene			0.1
Benzo[k]fluoranthene			0.1
Benzo[a]pyrene	12	3.9	1.0 (Index compound)
Chrysene			0.01
Dibenz[a,h]acridine			0.1
Dibenz[a,j]acridine			0.1
7H-dibenzo[c,g]carbazole			1.0
dibenzo[a,e]pyrene			1.0
Dibenzo[a,h]pyrene			10
Dibenzo[a,i]pyrene			10
Dibenzo[a,l]pyrene			10
indeno[1,2,3-c,d}pyrene			0.1
5-methylchrysene			1.0

4.9.8.3 ARSENIC

Arsenic is a naturally occurring element found in soil, water, air, and food as well as in many man-made products including pesticides, wood preservatives, paints, dyes, electrical components and medical drugs. Levels of naturally occurring arsenic in rocks and minerals differ widely across geographic regions, resulting in varying levels of arsenic in their soil and water erosion products. In addition to the naturally occurring arsenic, many soils are contaminated with anthropogenic sources of arsenic including arsenical pesticides, wood preservatives and mine tailings.

Arsenic was classified as a carcinogen in both humans and animals in 1980 by the International Agency for Research on Cancer. Arsenic was also added to the California Proposition 65 list in 1987 as a chemical known to cause cancer or reproductive harm. OEHHA developed an inhalation reference exposure level of 0.03 µg As/m^3 and an oral reference exposure level of 0.0003 mg/kg-day. Most studies on the toxicity of arsenic were determined from arsenic concentrations in water, where it can have a relatively high bioavailability. In contrast, arsenic in soil is often complexed with iron, aluminum and other metal oxides/hydroxides, markedly decreasing the bioavailability of this toxic metal. However, when arsenic in soil is evaluated using standard exposure intake assumptions, such as those in this document, background soil arsenic levels almost always have associated cancer risk far in excess of $1x10^{-6}$. Evaluation in the risk assessment process and the development of clean-up goals for arsenic are conducted on a site-by-site basis and may include considerations of additional ambient data, bioavailability, and incremental risk. Arsenic should be discussed in a separate section in the health risk assessment and the risk should not be added to the overall site risk estimates.

DTSC is in the process of developing a risk management screening criteria for soil arsenic at school sites, which is based on the data sets from many of the previously evaluated schools sites. Use of a screening value does not preclude the discussion of arsenic in the PEA, including distribution, sources, and sampling strategies. The final acceptable level of arsenic at a specific site may also depend on the history of the site, and as well as the natural background and distribution of arsenic (*Arsenic Cleanup Strategies, DTSC 2007)*. Since DTSC is in the process of developing additional guidance on arsenic, refer to the DTSC website, http://www.dtsc.ca.gov, for current guidance documents on arsenic.

4.9.8.4 LEAD

Exposure to lead is evaluated differently within the human health risk assessment from the cancer risk and hazard index assessments previously described. While lead may be removed from the list of COPC by comparison to background, in general, lead is almost always elevated on sites from historical uses of leaded gasoline and lead-based paints. Health risk from lead exposure is estimated using the Lead Risk Assessment Spreadsheet, termed LeadSpread. The most current version can be found at: http://www.dtsc.ca.gov/AssessingRisk/leadspread.cfm.

For school evaluations, the home grown produce feature in the LeadSpread is set to zero, assuming that home grown produce is not a significant contribution. Using default input values and a blood lead concentration for a non-pica child of 10 µg/dL (99^{th}

percentile), the soil screening level for lead for school sites is 255 mg/kg. Site specific input requires the approval from DTSC. The DTSC website, www.dtsc.ca.gov, should be consulted for any updates. The following are additional considerations for lead evaluation in California:

- CalEPA CHHSL
  The CHHSL calculations assume a 7% contribution of home grown produce, resulting in the CHHSL concentration of 150 mg/kg, which is usually not used in the school evaluation. Without the home grown produce, the CHHSL would be the same as the 255 mg/kg school screening value. The industrial/commercial CHHSL should not be used at school sites.

- CalEPA OEHHA: "*Child-Specific Benchmark Change in Blood Lead Concentration for School Site Risk Assessment*"
  (http://www.oehha.ca.gov/public_info/public/kids/schools010507.html)
  In December 2006 OEHHA proposed a child-specific Health Guidance Value (HGV) for lead in blood as a benchmark approach using a change in blood lead concentration of 1 µg/dl (ΔPB_B). This change in blood lead concentration is a lower-bound estimate that is thought to decrease the IQ by 1 point. IQ was chosen as a toxicological indicator of neurodevelopmental effects of lead. The proposed ΔPB_B is intended to be used as a *de minimus* increase in blood lead concentration from exposure to environmental lead from any given medium. OEHHA is currently in the process of revising the CHHSL for lead and the school screening values for lead may change in the future.

The Center for Disease Control (CDC) at this time still recommends an absolute maximum blood lead level of 10 µg/dl to start prevention activities.

When remedial actions are undertaken to mitigate lead exposures, a statistical analysis of lead concentrations remaining on site is required in the Removal Action Completion Report . The statistical evaluation should include at least the following: maximum and minimum lead concentrations; average, mean; and should give a range of values for the 95% Upper Confidence Limit on the Mean (95%UCL), based on ProUCL software recommended methods.

4.9.8.5 METHANE AND HYDROGEN SULFIDE

Methane and hydrogen sulfide are gases that can be found at sites as a result of natural and human processes. Both can be found in petroleum fields, operations, and wastes; sewers and septic systems; certain farming operations, and other industrial or natural processes. Methane is of concern from an explosive standpoint and hydrogen sulfide is of concern from a toxicological standpoint. If either is substance may be present, they should be evaluated as part of the site investigation.

4.9.8.5.1 Methane

Methane is an asphyxiant and is combustible and potentially explosive when it is present at concentrations in excess of 53,000 parts per million by volume (ppmv) in the presence of oxygen. This concentration is referred to as the Lower Explosive Limit

(LEL). In order to provide a margin of safety, a concentration of approximately ten percent (10%) of the LEL or 5,000 ppmv is commonly utilized as an "action level" above which mitigation measures are recommended. Where it is present at concentrations in excess of 5,000 ppmv, it is often conservatively presumed that methane may infiltrate through floors or cracks, accumulate under footings and in enclosed spaces (e.g., small rooms, vaults, wall spaces), and then cause a fire or explosion when an ignition source (e.g., pilot flame, electrical spark, cigarette) is present.

Methane in soil gas can be analyzed using a fixed laboratory or by using hand-held instruments. The detection limit should not exceed 500 ppm. More detailed information on sampling and analysis can be found in *Advisory- Active Soil Gas Investigations (DTSC and LARWQCB, 2003).*

The following screening levels may be used as a guide for further action on sites where methane is the only chemical of concern in subsurface soil. They may be appropriate for other circumstances involving methane and other chemicals of potential concern (COPCs) but DTSC should be consulted first. These levels are, in part, based upon a survey of local regulations and ordinances.

- Methane detection of 1,000 ppmv– Further investigation is recommended to determine the extent of methane in subsurface soil, potential source, and/or soil lithology.
- Methane detection of 5,000 ppmv (10% of the LEL) – Further response action (e.g., periodic monitoring, removal action) may be needed.
- Methane pressure of 0.1 pounds per square inch (psi), 2.8 inches of water, or 0.2 inches of mercury – Further investigation is recommended to determine the extent of methane in subsurface soil, potential source, and/or soil lithology.
- Methane pressure of 0.5 psi, 13.9 inches of water, or 1 inch of mercury – Further response action (e.g., periodic monitoring, removal action) may be required.

While specific remedies are not discussed for sites where subsurface methane levels fall between 1,000 and 5,000 ppmv or methane pressures are between 0.1 to 0.5 psi, a combination of enhanced interior ventilation systems (e.g., blower with a larger capacity), conduit seals, utility trench dams, and other easily installed mitigative improvements should be considered for structures on these sites based on site-specific conditions.

Additional information on methane can be found in *Advisory on Methane Assessment and Common Remedies at School Sites (DTSC, 2006)*, and *Advisory- Active Soil Gas Investigations (DTSC and LARWQCB, 2003).*

4.9.8.5.2 Hydrogen Sulfide

Hydrogen sulfide can be found in many of the same areas as methane. Like methane it is also flammable, however, it is also a danger from a toxicological point of view and can cause death relatively rapidly and without warning. Although it may have a detectable rotten egg-like odor at low concentrations people become desensitized very rapidly at

higher concentrations leading them to be unaware that they are being exposed. It is especially dangerous when encountered in enclosed spaces.

Hydrogen sulfide may cause irritation of the eyes, nose and throat at concentrations significantly less than 1 ppm. Higher concentrations may lead to headache, nausea, coughing, loss of consciousness, pulmonary edema, tremors, respiratory arrest, and death. If the concentration is high enough loss of consciousness may occur within seconds, with death following if rescue does not occur in time. There is very little evidence of adverse effects from long-term, low level exposure (2-5 ppm). However, some of those who have recovered from unconsciousness after short term exposure to high concentrations of hydrogen sulfide have been reported to have developed nervous system effects such as poor memory, insomnia, irritability, headaches, short attention span, vision impairment, abnormal motor function, psychosis, and other psychological problems.

Hydrogen sulfide in soil gas can be analyzed using a fixed laboratory or by using hand-held instruments. The detection limit should be equal to or less than 0.5 ppmv. More detailed information sampling and analysis can be found in *Advisory- Active Soil Gas Investigations (DTSC and LARWQCB, 2003).*

4.9.8.6 NATURALLY-OCCURRING ASBESTOS (NOA)

The California Education Code stipulates that in addition to hazardous materials on school sites, DTSC must also evaluate certain naturally occurring hazardous substances. Naturally occurring asbestos (NOA) is present in soils at levels that may produce health effects in a number of regions throughout California. Since there may be unacceptable potential health risks associated with exposure to soils on the site, school sites must be properly mitigated or remediated prior to occupancy for protection of human health and the environment. DTSC has developed guidance for the characterization and mitigation of NOA, *Interim Guidance Naturally Occurring Asbestos (NOA) at School Sites, September 2004* (http://www.dtsc.ca.gov/Schools/index.cfm#Advisories_and_Guidance).

Asbestos fibers are very small and are easily suspended in air and dispersed by wind or water. They do not dissolve in water and are resistant to heat, fire, chemical and biological degradation. Naturally occurring asbestos is found in many counties in California, especially in the Sierra Nevada foothills and the coastal range, associated with ultramafic rocks, fault zones and serpentinite rocks. Because NOA is a regional issue, NOA exposures cannot be totally prevented. However, DTSC has worked effectively with school districts to reduce potential additional exposures from NOA-containing soils on school sites by capping soils to prevent generation of airborne asbestos fibers from soils. In addition, mitigation measures are maintained and protected via long-term operations and maintenance (O&M) agreements with the school districts.

DTSC's authority pertains primarily to the effectiveness of mitigation/remedial actions for NOA-containing soils at the school site. Other agencies, such as the California Air Resources Board (CARB) and the Air Quality Management Districts have jurisdiction

over the broader regional air issues presented by NOA. DTSC recognizes that there is ongoing national and international research concerning the correlation of health impacts and risk assessments to varying forms of asbestos, including studies of physical characteristics, such as fiber length, and correlation between NOA in soils and air. Accordingly, DTSC will continue to review and revise its approach to NOA at school sites as new information and scientific data become available.

Exposures to airborne asbestos fibers generated from disturbing soils have been difficult to model and quantify. It is difficult to predict airborne asbestos fiber concentrations from the concentration of asbestos fibers in rock or soil. Because of this, a quantitative human health risk assessment with corresponding cancer risk values can not be calculated based solely on concentration of asbestos in soil. It is DTSC's strategy to prevent or reduce potential exposure to NOA by instituting mitigation measures based on the presence of NOA in soil or rock at existing or proposed school sites. The intent of these measures is to greatly reduce possible airborne entrainment of the asbestos fibers from NOA in the rock or soil on the school site.

4.9.8.7 TOTAL PETROLEUM HYDROCARBONS (TPH)

The term "total petroleum hydrocarbons" (TPH) covers the wide range of chemicals composed of carbon and hydrogen that are found in crude oils, petroleum products, wastes, and process streams from refineries and other petroleum-related facilities. The smallest and simplest TPH is methane with the largest being unknown but it is likely to be a hydrocarbon chemical containing greater than 34 carbon atoms. Some of the more well known petroleum hydrocarbons from a toxicological point of view include benzene, ethylbenzene, toluene, xylenes (BETX), butadiene, hexane, naphthalene, benzo(a)pyrene, benzo(a)anthracene, and dibenzo(a,h)anthracene.

4.9.8.7.1 Soil Matrix

Soil samples should be collected and analyzed for TPH as part of any site investigation where the presence of petroleum products or wastes is known or suspected in addition to standard investigations for PAHs, VOCs, metals and other TPH related compounds.

4.9.8.7.2 Soil Gas

Soil gas sampling should be considered for $TPH_{gasoline}$ as well as for VOCs with a Henry's Law constant of 1E-05 atm-m^3/mole or higher, or a vapor pressure of 1E-03 mmHg or higher, and when the soil matrix has adequate air permeability. Initial sampling should occur in the most permeable areas of known or suspected contamination and should target the top and bottom of permeable soil horizons.

4.9.8.7.3 Risk Assessment

A quantitative risk evaluation of TPH should be performed regardless of its concentration at a site, and it must be done in combination with an evaluation of other speciated contaminants that may be present as part of the petroleum contamination, such as BETX's and PAHs.

TPH may refer to a variety of products or wastes. However, in risk assessments TPH is generally grouped into three ranges according to the number of hydrocarbons: $TPH_{gasoline\ (g)}$, $TPH_{diesel\ (d)}$, and $TPH_{motor\ oil/residual\ range\ (mo/rr)}$.

4.9.8.7.4 Toxicity Criteria

The toxicity factors to be used for evaluating non-cancer health effects from TPH are listed in Table 4-5 below and can also be found in the DTSC guidance *Evaluating Human Health Risks from Total Petroleum Hydrocarbons (TPH) (DTSC under review - to be released).*
Since neither Cal/EPA nor USEPA have toxicity factors for TPH, DTSC is recommending the use of factors developed by others. Toxicity values based on the potential for carcinogenic effects, if any, are not available. Therefore, carcinogenic risk at sites with TPH should be accounted for by using cancer slope factors, for individual carcinogens (e.g., benzene, naphthalene, polynuclear aromatic hydrocarbons) when these chemicals are present.

Table 4-5
TPH Non-Cancer Toxicity Criteria

Exposure Route	Carbon Range	TPHCWG (mg/kg/day)	MADEP (mg/kg/day)	DTSC/HERD (mg/kg/day)	Critical Effect
Oral	Aliphatic				
	C_5-C_8	5	0.04	**0.04**	Neurotoxicity
	C_9-C_{18}	0.1	0.1	**0.1**	Change in liver weight
	C_{19}-C_{32}	2.0	2.0	**2.0**	Liver granuloma, histiocytosis in lymph nodes
	$C_{>16}$-C_{35}	2.0	-	**2.0**	""
	Aromatic				
	C_6-C_8	Evaluate benzene	Evaluate each COPC	**Evaluate each COPC (i.e. BTEX)**	Depends on COPC
	C_9-C_{16}	0.04	-	**0.004**	Lung, toxicity
	C_{17}-C_{32}	0.03	-	**0.04**	Liver, kidney toxicity
	C_9-C_{32}	-	0.03	**0.04**	Liver, kidney toxicity
		(mg/m^3)	**(mg/m^3)**	**(mg/m^3)**	
Inhalation	Aliphatic				
	C_5-C_8	18.4	0.2	**0.7**	Neurotoxicity
	C_9-C_{18}	1.0	0.2	**0.3**	Changes in blood chemistry, liver and body weight
	C_{19}-C_{32}	-*	-*		-
	Aromatic				
	C_6-C_8	Evaluate benzene	Evaluate each COPC	**Evaluate each COPC (i.e., BTEX)**	Depends on COPC
	C_9-C_{16}	0.2	0.05	**0.05**	Liver, kidney toxicity, body weight reduction
	C_{17}-C_{32}	-*	-*		-

* Not developed due to low volatility of the COPCs in this hydrocarbon range. Although exposure via inhalation may occur via C_{17}-C_{32} TPH in dust HERD recommends that a quantitative evaluation of inhalation exposure for C_{17}-C_{32} not be performed due to the significant uncertainty involved.

4.9.8.8 RADON

Radon is a colorless, odorless and toxic radioactive gas with a half-life of 3.8 days. Radon is formed from the radioactive decay of radium from rocks and soils containing elevated levels of uranium. Although radon disintegrates with the emission of an alpha particle, several additional alpha, beta and gammas are then emitted over the next few minutes as the resulting unstable isotopes disintegrate. Other harmful effects associated with chronic exposure to radon include: emphysema, pulmonary fibrosis, chronic interstitial pneumonia, silicosis and respiratory lesions (http://www.epa.gov/radon/risk_assessment.html).

The U.S. EPA and the United States Geological Survey (USGS) have evaluated the radon potential in the United States and have developed maps that divide each county into one of three zones:

- Zone 1 counties have a predicted average indoor radon screening level grater than 4 pico curies per liter (pCi/L).
- Zone 2 counties have a predicted average indoor radon screening level between 2 and 4 pCi/L.
- Zone 3 counties have a predicted average indoor radon screening level less than 2 pCi/L.
- Based on a national residential radon survey completed in 1991, the average indoor radon level is 1.3 pCi/L in the United States. The average outdoor level is about 0.4 pCi/L.

If proposed school is located in a Radon Zone 1 area or identified as significant from local or other applicable databases, then radon should be addressed as a COPC. Since indoor radon cannot be adequately predicted without actual indoor sampling data, quantitative assessments are not possible for proposed schools. Therefore, radon should be addressed qualitatively in the PEA in order for DTSC to make a determination as to whether mitigation may be required. For schools where buildings already exist, such as expansion sites or investigations of existing schools, then actual measurements of radon may be possible. DTSC should be contacted for sampling requirements for these contingencies.

4.9.9 Ecological Risk Screening

Each site should be quantitatively evaluated for potential ecological issues, both habitat and ecological receptors. In the vast majority of proposed and existing school sites, there will be no suitable ecological habitat at or near the site and only species adapted to living in human populated areas will be present. In such cases, a short paragraph stating the lack of suitable habitat will suffice for the ecological screening evaluation. At those few sites where there is suitable habitat to support species of interest, or where site activities could disrupt such habitat and species, a screening level ecological evaluation may be necessary. Guidance for this evaluation are available through links on the DTSC website, “Guidance for Ecological Risk Assessments (EcoNOTEs),” at <http://www.dtsc.ca.gov/AssessingRisk/eco.cfm>. For sites where ecological habitat has been damaged, or will be removed or altered with development of the site, the natural resource trustees must be informed.

CHAPTER 5 SUPPLEMENTAL SITE INVESTIGATION (SSI)

5.1 INTRODUCTION

DTSC determines whether a SSI is required or not based on the findings of the PEA. A SSI is required if the hazardous constituents are detected during the PEA at levels that may pose risk to human health or the environment. As a condition of receiving state funding for school site acquisition or new construction, Education Code section 17213.2, subdivision (a), requires that school districts conduct response actions if DTSC determines, based on the PEA findings that further investigation is required to determine whether a release or threatened release of hazardous materials or whether a naturally occurring hazardous material, which may pose a threat to public health or the environment, exists at this site.

A school district may choose to proceed in a SSI or RI to fully characterize site contamination. According to Health and Safety Code, division 20, chapter 6.8, section 25322.2, a RI means those actions deemed necessary by the department to determine the full extent of a hazardous substance release at a site, identify the public health and environmental threat posed by the release, collect data on possible remedies, and otherwise evaluate the site for purposes of developing a remedial action plan. The SSI is an abbreviated RI, and does not require conducting treatability testing as necessary to evaluate the potential performance and cost of the treatment technologies that are being considered.

Pursuant to Education Code, section 17213.1, subdivision (a)(10), if a PEA determines that a release of hazardous material has occurred, there is a threat of a release of hazardous materials, that a naturally occurring hazardous material is present, or any combination thereof, that requires further investigation, and DTSC approves this determination, the school district may elect not to pursue to acquisition or construction project. If the district elects to move forward with the site, further investigation to characterize the nature and extent of contamination can be conducted through the SSI process. The following sections describe the SSI process.

5.2 OBJECTIVE

In some cases, DTSC may recommend additional investigation and sampling to fully characterize the horizontal and vertical extent of contamination to determine if cleanup is necessary. This additional investigation may be performed as an SSI. The purpose of an SSI may include the following (Ed. Code, § 17210.1, subd. (a)(2) and Health and Saf. Code, § 25322.2 (remedial investigation)):

- Determine the nature and extent of a release of hazardous materials or the presence of naturally occurring hazardous materials.
- Identify the public health and environment threat posed by the release.
- Collect data on possible remedies, and otherwise evaluate the site for purposes of developing a response action.
- Estimate potential threat of contamination to public health or the environment.

The SSI report describes the overall objectives of the supplemental investigation and any critical elements. Prior to any field work for the SSI, an SSI Technical Memorandum (Tech Memo) or Workplan is developed and approved by DTSC. The tech memo or workplan will describe where all samples will be collected (location and depth), types of matrices that will be sampled and the analytical parameters. It explains the rationale for each sampling point, the total number of sampling points, and any statistical approach used to select these points. Also included are any field screening techniques that will be used to identify samples for laboratory analysis. The purpose of an SSI may include the following (Ed. Code, § 17210.1, subd. (a)(2) and Health and Saf. Code, § 25322.2):

- Determine the nature and extent of a release of hazardous materials or the presence of naturally occurring hazardous materials.
- Identify the public health and environment threat posed by the release.
- Collect data on possible remedies, and otherwise evaluate the site for purposes of developing a response action.
- Estimate potential threat of contamination to public health or the environment.

5.3 OVERSIGHT COST

Pursuant to Education Code section 17213.1, subdivision (a)(11) and section 17213.2, subdivision (h), the school district shall reimburse DTSC for all of its response costs. Oversight costs associated with the DTSC SSI process varies according to site size and complexity of potential environmental issues based on additional characterization activities required. The DTSC SSI oversight team typically consists of a project manager, a geologist, a toxicologist, and some oversight from DTSC management. Hourly rates for staff are revised annually and include indirect labor charges. A breakdown of these costs is provided in a cost estimate as Exhibit D in the Voluntary Cleanup Agreement or School Cleanup Agreement and therefore the district has the opportunity to review costs prior to signing the School Cleanup Agreement or Voluntary Cleanup Agreement. DTSC typically requests payment of 50% of estimated costs in advance, due at the time the agreement is signed by both parties, and held in an account maintained by DTSC's Cost Recovery Unit. DTSC provides school districts with quarterly invoices for each project which contain a detailed accounting and supporting documentation of all expenditures during the previous quarter. Bills are due and payable within sixty days of DTSC's billing.

The final costs for oversight depend on the number of hours expended by DTSC staff. Calculation of charges may vary depending on the number of work hours per month. Fee amounts are adjusted annually to reflect increases or decreases in the cost-of-living, as measured by the Consumer Price Index, issued by the Department of Labor or a successor agency of the United States Government. . In case the account has a credit balance at the close of the project, DTSC's Cost Recovery Unit refunds the amount pending processing by the Office of the State Controller.

Additional information on cost recovery and oversight agreements is provided in Appendix D.

5.4 PROCESS

The SSI process is detailed on Figure 5-1. In cases where an additional delineation is required to uncover the extent of contamination at a site, DTSC will oversee the development and implementation of a Supplemental Site Investigation (SSI). The SSI will allow the DTSC to make a decision regarding the human health risk posed by contamination at the site. If the district elects to proceed with the site, pursuant to Education Code, section 17213.2, subdivision (a), the district shall enter into a Voluntary Cleanup Agreement or School Cleanup Agreement with DTSC for oversight of the SSI and any subsequent response actions. A School Cleanup Agreement would be required if the district will be requesting full and final funding from the California Department of Education via a School Facilities Planning Division 4.15 form prior to implementation of the required response action. To enter into the Voluntary Cleanup Agreement or School Cleanup Agreement, the district is required to prepare a written request to amend the Environmental Oversight Agreement into a Voluntary Cleanup Agreement or School Cleanup Agreement and submit it to the DTSC Schools Agreement Coordinator for processing. If the district does not have an existing Environmental Oversight Agreement with DTSC, the district is required to complete a Voluntary Cleanup Agreement application and submit it to the DTSC Schools Agreement Coordinator for processing. To initiate the SSI process the following tasks occur:

- The district requests amendment of the Environmental Oversight Agreement to a Voluntary Cleanup Agreement or School Cleanup Agreement; or submits the Voluntary Cleanup Agreement application to the Agreement Coordinator;
- The Agreement Coordinator processes the application and returns two original Voluntary Cleanup Agreements or School Cleanup Agreements to the district for signature;
- The district returns the signed originals to the Agreement Coordinator (using a mail tracking system);
- The Agreement Coordinator finalizes the Voluntary Cleanup Agreement or School Cleanup Agreement for signature by the DTSC Agreement Manager;
- The Agreement Coordinator returns one fully executed original Voluntary Cleanup Agreement or School Cleanup Agreement to the district, along with a request for an advance payment, and designation of a DTSC Project Manager and contact information;

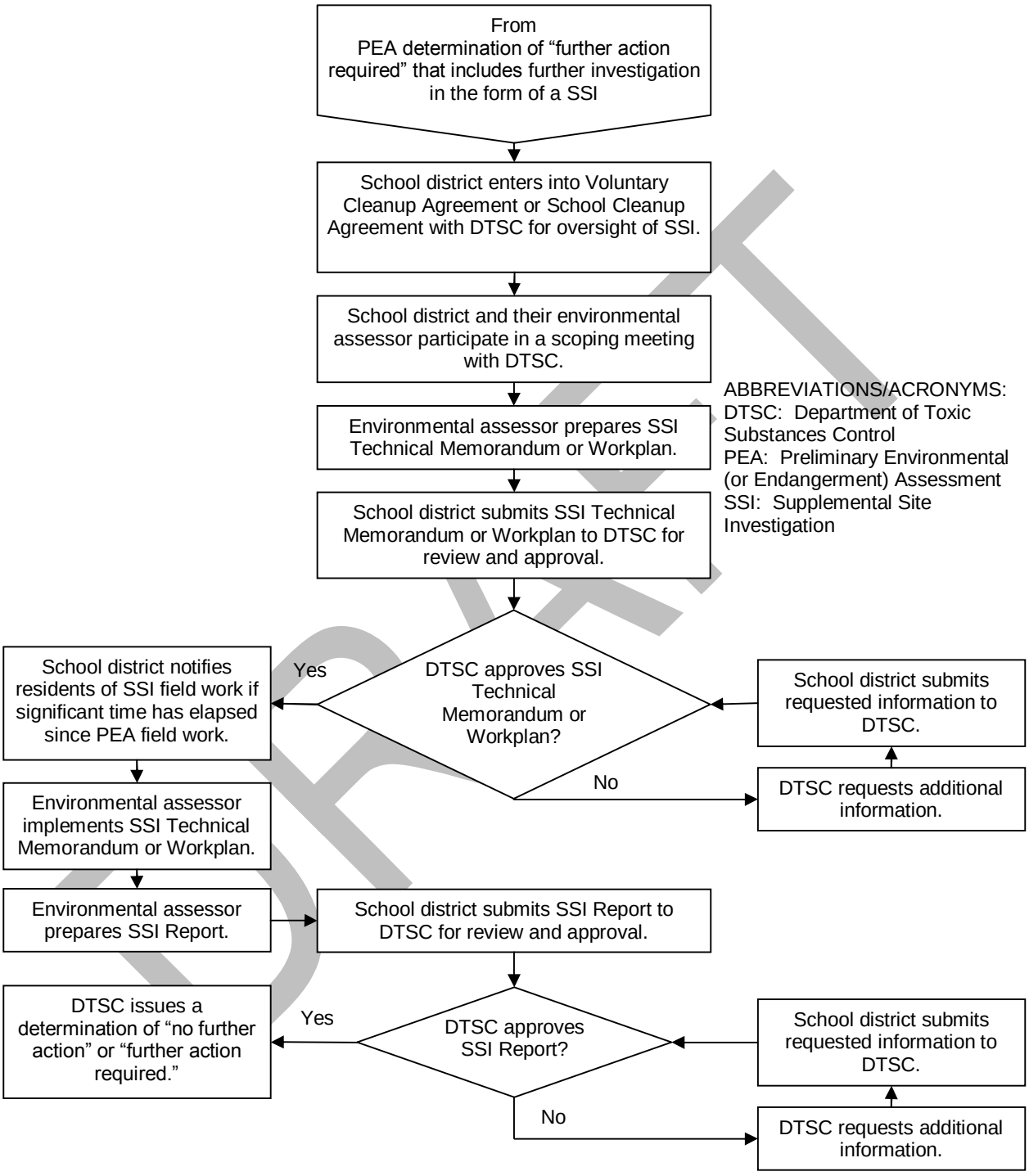
- The district may contact the DTSC Project Manager to schedule a scoping meeting, if the DTSC Project Manager has not made contact.

DTSC recognizes that some districts are required to present the Voluntary Cleanup Agreement or School Cleanup Agreement to the school board during their monthly board meeting and therefore the DTSC Project Manager may be assigned prior to execution of the Voluntary Cleanup Agreement or School Cleanup Agreement. It is essential that the Voluntary Cleanup Agreement or School Cleanup Agreement be fully executed prior to DTSC review of documents, however to assist the district, a scoping meeting may be scheduled prior to Voluntary Cleanup Agreement or School Cleanup Agreement execution. Once the Voluntary Cleanup Agreement or School Cleanup Agreement is fully executed, the Project Manager will be responsible to assist the district through the SSI process, as detailed in subsequent chapters. Responsibilities will be discussed during the scoping meeting.

The SSI and subsequent response action process can take approximately 6 months to complete. An overview of the SSI review and approval process is provided in Figure 6. This includes development and implementation of a work plan or TM, report preparation and associated revisions (if necessary), and DTSC review and comment period timeframes. There is no mandated timeframe associated with SSI work, however, time frames to complete an SSI depends upon various factors including complexity of the site, consultant competence, and district's priority for the project. A human health risk screening should also be conducted as part of the SSI, based upon the results of the delineation.

Upon review of the SSI, DTSC will issue comments if necessary, and a determination, based upon the findings. The possible results of an SSI determination are: No Further Action Required, or Further Action required. When Further Action is required, DTSC will state the reason in a determination letter, and reference the findings of the PEA and SSI reports, substantiating the determination.

Figure 5-1
SSI Review and Approval Process



5.4.1 SSI Scoping Meeting

DTSC recommends that prior to initiating an SSI, a scoping meeting should be held with DTSC involving both the school district and their consultant. Before the meeting the

school district should provide an agenda and scoping document for DTSC review. During the meeting, participants will discuss the scope of work (SOW). Once DTSC gives concurrence on the SOW the district shall develop an SSI Work Plan or Tech Memo for DTSC review and approval. At least two days before the scoping meeting, the consultant should at a minimum, provide the following information:

- A scoping meeting agenda (See Figure 10 – Example of an SSI Scoping Meeting Agenda);
- A summary of previous investigations;
- Identification of AOCs that require further investigation or response actions
- identification of data gaps;
- Table including proposed sampling locations and analytes;
- Figures including a site map with sampling locations;
- Project schedule.

Following the meeting, the district's consultant should prepare draft meeting minutes and email to participants for review and comment to ensure action items and concurrence on meeting outcome. Subsequently, the district will submit an SSI Work Plan or Tech Memo for DTSC review and approval, in accordance with the project schedule. Prior to submittal, the consultant/district should confirm the number of review documents to be submitted to DTSC, as well as names and addresses of DTSC recipients with the project manager. The items identified in sections 5.1.5.3 and/or 5.1.5.4 should be included in the SSI Tech Memo or Work Plan and consistent with the PEA Work Plan.

5.4.2 SSI Technical Memorandum

During the SSI scoping meeting between DTSC and the school district representatives, DTSC may deem it appropriate to prepare a SSI Technical Memorandum for the proposed field work. The district would submit a SSI Technical Memorandum to DTSC for review and approval prior to implementing any field activities. An SSI Technical Memorandum is an abbreviated version of a SSI Workplan, and only applicable for sites where sampling will be similar to the PEA and DTSC approved the Sampling and Analysis Plan (including the Field Sampling Plan and Quality Assurance Project Plan), Health and Safety Plan, and Investigation-Derived Waste Management Plan in the PEA Workplan. See Appendix Q - SSI Tech Memo Template, for a sample document.

5.4.3 SSI Workplan

Following DTSC's PEA determination that a SSI is required, the district would submit a SSI Work Plan to DTSC for review and approval prior to implementing any field activities. If necessary, a SSI scoping meeting between DTSC and District representatives would help to discuss SSI scope and objectives. The Work Plan must include all information necessary for implementing field work including a site-specific Field Sampling Plan, Health and Safety Plan and a Quality Assurance Project Plan. The Workplan should follow all U.S EPA and DTSC relevant guidelines. See Appendix R – SSI Workplan Template, for a sample document.

5.4.4 Field Work

Field activities for the SSI should follow the SSI Technical Memorandum or Workplan approved by DTSC. If site conditions differ from those presented in the DTSC-approved SSI Technical Memorandum or Workplan, additional work may be necessary. Prior to the start of field work, the school district should submit a schedule that includes dates for field work, public participation activities and submission of the SSI Report.

Additionally, the school district should notify DTSC a minimum of 48 hours in advance of field work or schedule changes.

5.4.5 SSI Report

The Supplemental Site Investigation (SSI) Report presents findings of the field investigation conducted after the PEA is completed. The main objective in cases where contamination is identified is to provide data that would define the extent of soil, soil gas and/or groundwater contamination. The information gained from this process can then be used in the development of a Removal Action Workplan to evaluate alternatives to mitigate the site.

The objectives of a SSI Report depend on the project. The SSI is warranted when the PEA sampling identified areas and chemicals of concern, but findings are insufficient to make a risk management decision/ site determination. Most commonly, an SSI is required when contamination has been identified and further characterization of site conditions relating to the nature and extent of contamination is necessary.

The SSI Report does not provide comprehensive background information (the PEA should be referenced for detailed background information). The SSI Report describes the sampling and analysis plan, variations encountered in the field, sampling results, risk evaluation of data (which may include an updated health risk assessment), conclusions, and recommendations. See Appendix S – SSI Report Template, for a sample document.

5.5 POSSIBLE DETERMINATIONS

Based on review of the SSI Report, DTSC will issue a determination of “no further action” or “further action”.

5.5.1 No Further Action

DTSC will issue a determination of “no further action” if additional investigations and/or response actions are not required. To receive a no further action determination, the SSI must clearly define the lateral and vertical extent of elevated concentrations to show they are limited and there is no significant risk to public health or the environment.

Pursuant to Education Code section 17213.2, subdivision (e), if a previously unidentified release or threatened release of a hazardous material or the presence of a naturally occurring hazardous material is discovered anytime during construction at the site, the district shall cease all construction activities at the site and notify DTSC. Additional

assessment, investigation, or cleanup may be required. Activities to address environmental findings during school construction are included in Appendix F.

5.5.2 Further Action Required

DTSC will issue a determination of "further action required" if additional investigations and/or response actions are required. If a removal action is necessary, a Removal Action Workplan (RAW) or Removal Action Plan (RAP) pursuant to Health and Safety Code Section 25356.1(c) would be appropriate to address any contamination which may pose an unacceptable risk. However, more complex sites requiring further characterization may also undergo a Remedial Investigation/Feasibility Study as defined by Health and Safety Code, sections 25314 and 25322.2.

5.6 OPTIONS

5.6.1 Environmental Hardship Funding Approval

If a school district elects to proceed with cleanup (removal or remedial action) and plans to apply for "environmental hardship" funding approval, it should request that DTSC specify in the determination letter that preparation and implementation of the required response action is estimated by DTSC to take six months or more for completion. "Environmental hardship" with CDE "contingent" site approval allows a school district to seek advanced or early State Allocation Board funding prior to completion of response action.

5.6.2 Off-Site Source of Groundwater Contamination

School districts and LEAs are not required to take action in response to a release of hazardous material to groundwater underlying a school site if the release occurred at a site other than the school site and if the following specific conditions apply (Ed. Code, § 17213.2, subd. (b)):

1. School district did not cause or contribute to the release of hazardous material to groundwater.
2. School district provides access to the school site.
3. School district does not interfere with response action activities.

However, if the school site is the source of hazardous materials impacting groundwater, DTSC will require that school districts and LEAs take appropriate response actions as required by DTSC. DTSC cautions school districts and LEAs that cleanups of groundwater contamination may take longer and be more costly than response actions for contaminants in soil.

5.6.3 Partial Site Approval

A school district may submit a written request for "partial site approval" from DTSC to proceed with construction on portions of the site that DTSC determines are not impacted by the release or threatened release of hazardous materials, provided that all of the following three requirements are met (Ed. Code, § 17213.2, subd. (f)):

1. DTSC determines that construction will not interfere with any required response actions
2. Site conditions will not pose a significant threat to the health and safety of workers involved with construction
3. The nature and extent of any release of hazardous materials or the presence of any naturally occurring hazardous materials have been fully characterized.

5.6.4 School Facilities Planning Division 4.15 Form

If DTSC has determined that further investigation and/or cleanup is required, a school district may submit School Facilities Planning Division form 4.15 to DTSC for signature. This form allows a school district to seek final site approval and/or final plan approval from CDE, prior to completing DTSC requirements for further investigation and/or cleanup. Note that this form is not required for soil contamination associated with lead-based paint, OCPs from termiticide application, or PCBs from electrical transformers, which are addressed using School Facilities Planning Division 4.14 form.

Final site approval or final plan approval from CDE allows a school district to seek full State Allocation Board site acquisition apportionment or new construction project apportionment, including the state share of costs based upon eligible actual or estimated cleanup costs (if any) known at the time of the application. By signing this form, the school district commits to complete all investigation and cleanup activities required by DTSC prior to occupancy of affected areas of the project site. The school district also acknowledges that any related additional cleanup costs may be the full responsibility of the school district and would be subject to applicable funding adjustment limits and criteria. Pursuant to the Education Code, funding shall be rescinded if criteria to have funds released within 18 months of apportionment are not met.

Prior to requesting DTSC completion of this form, a school district will be requested to enter into a School Cleanup Agreement with DTSC. Refer to section 2.6.4 for DTSC agreements. The SFPD 4.15 form may be utilized by a school district for school projects falling into one or more of the following four categories:

A. DTSC has approved the draft or final RAW or RAP for the required response actions for the site.
B. DTSC has determined that the required response action must be implemented in the design and/or construction of the proposed project, such as school sites with methane gas (where a venting system must be installed in individual buildings to prevent gas accumulation within buildings), or with naturally occurring asbestos (where caps or other barriers must be placed over soils to prevent exposure).
C. DTSC has issued a “partial site approval” where the response action and proposed construction projects are located on separate portions of the site, and will not interfere with each other.
D. DTSC has overseen completion of required response actions but determined that further groundwater investigation is still required which may also require additional response actions, but will not impact school construction or occupancy.

A school district may complete the top portion of the form, and submit the form to DTSC, along with a copy of the DTSC determination letter, for completion of the lower portion of the form; DTSC will forward the completed form via facsimile and mail to CDE and the school district. CDE will issue final approvals upon receipt of the completed form and when all other site or plan requirements have been met.

5.7 HUMAN HEALTH SCREENING EVALUATION

Refer to Section 4.9, Human Health Screening Evaluation, in the PEA.

BIBLIOGRAPHY

Agency for Toxic Substances and Disease Registry (ATSDR). 2001. *Division of Toxicology ToxFAQs™, Polychlorinated Biphenyls.* United States Department of Health and Human Services, Public Health Service, Agency for Toxic Substances and Disease Registry. February 2001.

ATSDR. 1999. *Agency for Toxic Substances and Disease Registry ToxFAQs, Lead, CAS #7439-92-1.* June 1999.

American Society of Testing and Materials (ASTM). 2005. *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.* Designation E 1527. Approved on November 1, 2005.

Cal/EPA (State of California, Environmental Protection Agency). 2005. *Use of California Human Health Screening Levels (CHHSLs) in Evaluation of Contaminated Properties.* January 2005.

Cal/EPA. 1995. *Guidelines for Hydrogeologic Characterization of Hazardous Substance Release Sites*. Volume I: Field Investigation Manual, and Volume II: Project Management Manual. July 1995.

Centers for Disease Control (CDC). 1991. *Preventing Lead Poisoning in Young Children.* United States Department of Health and Human Services, Public Health Service, Centers for Disease Control. October 1, 1991.

Department of Health Services (DHS). 1998. *Lead Hazards in California's Public Elementary Schools and Child Care Facilities, Report to the California State Legislature.* State of California, Department of Health Services, Division of Environmental and Occupational Disease Control, Childhood Lead Poisoning Prevention Branch. April 15, 1998.

Department of Toxic Substances Control (DTSC). 2008. *Interim Guidance for Sampling Agricultural Properties (Third Revision).* April 30, 2008.

DTSC. 2007. *Arsenic Strategies, Determination of Arsenic Remediation, Development of Arsenic Cleanup Goals for Proposed and Existing School Sites.* March 21, 2007. [under revision. Verify title and date when final is posted]

DTSC. 2006a. *Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical*

Transformers. Revised June 9, 2006, non-substantive revisions made September 12, 2006.

DTSC. 2006b. *Residential Pesticide Study, Final Report.* State of California, Environmental Protection Agency. May 8, 2006.

DTSC. 2005a. *Advisory on Methane Assessment and Common Remedies at School Sites.* June 16, 2005.

DTSC. 2005b. *Final Report, Background Metals at Los Angeles Unified School Sites – Arsenic.* June 6, 2005.

DTSC. 2005c. *Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air*. Interim Final. December 15, 2004, revised February 7, 2005.

DTSC. 2004. *Interim Guidance for Naturally Occurring Asbestos (NOA) at School Sites*. Revised September 24, 2004.

DTSC. 2003. "PCB Advisory for Schools: How Voluntary Lighting Retrofits Can Address Hidden Dangers." State of California, California Environmental Protection Agency. June 2003.

DTSC. 2002a. *Fact Sheet #5: Proposed Regulations on Preparation of Phase I Environmental Site Assessments*. September 2002.

DTSC. 2001a. *Informational Advisory, Clean Imported Fill Material.* October 2001.

DTSC. 2001b. *Guide to Selecting a Consultant.* Site Mitigation Program, Voluntary Cleanup Program. June 2001.

DTSC. 1998. *Abandoned Mine Lands Preliminary Assessment Handbook*. January 1998.

DTSC. 1997. *Selecting Inorganic Constituents as Chemicals of Potential Concern at Risk Assessments at Hazardous Waste Sites and Permitted Facilities*, Final Policy. Human and Ecological Risk Division. February 1997.

DTSC. 1994. *Preliminary Endangerment Assessment: Guidance Manual.* Second printing June 1999.

DTSC and California Regional Water Quality Control Board – Los Angeles Region (DTSC/LARWQCB). 2003. *Advisory – Active Soil Gas Investigations*. January 28, 2003.

Ebeling, Walter. 1975. *Urban Entomology.* University of California, Division of Agricultural Sciences, © 1975, 1996, 2002, reasonably faithful reproduction of the material originally published in 1975. Website <http://www.entomology.ucr.edu/ebeling/> accessed on November 27, 2005.

Kilburn, K. H. and J.C. Thornton. 1995. "Protracted neurotoxicity from chlordane sprayed to kill termites." Environmental Health Perspectives. 103(7-8): 690-694.

Office of Environmental Health Hazard Assessment (OEHHA). 2005. "Chemicals Known to the State to Cause Cancer of Reproductive Toxicity." State of California, Environmental Protection Agency, Office of Environmental Health Hazard Assessment, Safe Drinking Water and Toxic Enforcement Act of 1986. September 30, 2005. <http://www.oehha.ca.gov/prop65/prop65_list/Newlist.html> accessed on October 26, 2005.

OEHHA. 2004. *Guidance for School Site Risk Assessment Pursuant to Health and Safety Code Section 901(f): Guidance for Assessing Exposures and Health Risks at Existing and Proposed School Sites,* Final Report. Integrated Risk Assessment Section. February 2004.

Total Petroleum Hydrocarbon Criteria Working Group (TPHCWG). 1998. *Total Petroleum Hydrocarbon Criteria Working Group Series, Volume 1, Analysis of Petroleum Hydrocarbons in Environmental Media.* March 1998.

United States Consumer Product Safety Commission (U.S. CPSC). 2005. "CPSC Warns About Hazards of 'Do I Yourself' Removal of Lead Based Paint: Safety Alert," CPSC Document #5055. Website <http://www.cpsc.gov/cpscpub/pubs/5055.html>, accessed on September 23, 2005.

United States Environmental Protection Agency (U.S. EPA). 2008a. "EPA Map of Radon Zones." Last updated on August 7, 2008. Website <http://www.epa.gov/radon/zonemap.html>, accessed on August 9, 2008.

U.S. EPA. 2008b. "Assessment of Risks from Radon in Homes." Last updated on August 4, 2008. Website <http://www.epa.gov/radon/risk_assessment.html>, accessed on August 9, 2008.

U.S. EPA. 2007a. *ProUCL Version 4.00.02 User Guide.* EPA/600/R-07/038. Office of Research and Development. April 2007.

U.S. EPA. 2007b. *ProUCL Version 4.0 Technical Guide.* EPA/600/R-07/041. Office of Research and Development. April 2007.

U.S. EPA. 2006a. *Guidance on Systematic Planning Using the Data Quality Objectives Process (QA/G-4).* EPA/240/B-06/001. February 2006.

U.S. EPA. 2006b. *Systematic Planning: A Case Study for Hazardous Waste Site Investigations (QA/CS-1).* EPA/240/B-06/004. February 2006.

U.S. EPA. 2005. "Dieldrin (CASRN 60-57-1)." Integrated Risk Information System. Revised March 7, 2005. Website <http://www.epa.gov/iris/subst/0225.htm>, accessed on March 25, 2005.

U.S. EPA. 2004a. "Polychlorinated Biphenyls (PCBs), Welcome to the PCB Home Page at EPA." December 8, 2004. Website <http://www.epa.gov/opptintr/pcb/>, accessed on March 25, 2005.

U.S. EPA. 2004b. "Lead in Paint, Dust and Soil – Basic Information." Last updated November 30, 2004. Website <http://www.epa.gov/lead/leadinfo.htm>, accessed on September 22, 2005.

U.S. EPA. 2004c. "Health Effects of PCBs." Last updated on September 8, 2004. Website <http://www.epa.gov/opptintr/pcb/effects.html>, accessed on September 15, 2005.

U.S. EPA. 2002a. "Chlordane (Technical) (CASRN 12789-03-6)." Integrated Risk Information System. Revised December 3, 2002. Website <http://www.epa.gov/iris/subst/0142.htm>, accessed on March 25, 2005.

U.S. EPA. 2002b. *Guidance for Quality Assurance Project Plans (QA/G-5).* EPA/240/R-02/009. December 2002.

U.S. EPA. 2002c. *Guidance on Choosing a Sampling Design for Environmental Data Collection (QA/G-5S).* EPA/240/R-02/005. December 2002.

U.S. EPA. 2001a. *Decision Error Feasibility Trials (DEFT) Software (QA/G-4D).* EPA/240/B-01/007. September 2001

U.S. EPA. 2001b. "Asbestos (CASRN 1332-21-4)." Integrated Risk Information System. Revised February 22, 2001. Website <http://www.epa.gov/iris/subst/0371.htm>, accessed on March 22, 2005.

U.S. EPA. 2000. *Guidance for the Data Quality Objectives Process.* EPA QA/G-4. EPA/600/R-96/055. Office of Environmental Information. August 2000.

U.S. EPA. 1997a. *Toxicological Review of Chlordane (Technical) (CAS No. 12789-03-6), In Support of Summary Information on the Integrated Risk Information System (IRIS).* December 1997.

U.S. EPA. 1997b. *EPA Office of Compliance Sector Notebook Project: Profile of the Ground Transportation Industry, Trucking, Railroad, and Pipeline*. EPA/310-R-97-002. September 1997.

U.S. EPA. 1996. *Federal Facilities Sector Notebook: A Profile of Federal Facilities.* EPA 300-B-96-003. January 1996.

U.S. EPA. 1992. *Guide to Management of Investigation-Derived Wastes, Quick Reference Fact Sheet.* Office of Solid Waste and Emergency Response. Publication 9345.3-03FS. January 1992.

U.S. EPA. 1989. *Risk Assessment Guidance for Superfund (RAGS), Volume I, Human Health Evaluation Manual (Part A)*, Interim Final. EPA/540/1-89/002. Office of Emergency and Remedial Response. December 1989.

U.S. EPA. 1988. *Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, Interim Final.* Office of Emergency and Remedial Response. EPA/540/G-89/004. OSWER Directive 9355.3-01. October 1988.

U.S. EPA. 1986. *Test Methods for Evaluating Solid Waste, Physical/Chemical Methods.* EPA Publication SW-846 Third Edition, November 1986, as amended by Updates I (July, 1992), II (September, 1994), IIA (August, 1993), IIB (January, 1995), III (December, 1996), IIIA (April, 1998), IIIB (June , 2005), draft IVA (May, 1998), and draft IVB (November, 2000); available from the Superintendent of Documents, United States Government Printing Office, Washington, DC 20402, (202) 512-1800; website http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm.

University of California (UC). 2001. "Termites, Integrated Pest Management in and around the Home," *Pest Notes,* Publication 7415. Agriculture and Natural Resources Revised May 2001.

APPENDIX A ENVIRONMENTAL REVIEW OF EXISTING SCHOOLS

Under current statutes, DTSC oversight is required for state funded new construction (except for minor additions categorically/statutorily exempt from CEQA, per Education Code section 17268, subdivision (c)), but not for the contiguous existing school. School districts are currently not required to involve DTSC when concerns arise about hazardous materials on the school site or possible migration of hazardous materials from adjacent properties and facilities. In addition, the state's school facilities program for modernization projects does not provide additional funding for hazardous material investigation or mitigation, or DTSC oversight costs.

Existing schools that are not expanding or acquiring property with state funds are not subject to provisions in the Education Code requiring environmental review under DTSC oversight. Seventy-two percent of existing California schools were constructed over 25 years ago, prior to passage of environmental protection laws in the 1970s and 1980s, and some were built on or adjacent to properties impacted by hazardous materials from previous or current land uses such as, burn dumps, landfills, contaminated fill materials, oil fields, or leaking storage tanks. In some cases, existing schools may also have been impacted by hazardous materials from neighboring commercial, agricultural or industrial properties, where pesticides, heavy metals, or volatile organic compounds were used or released. In some cases, even if the original school was built on clean property, nearby or adjacent commercial or industrial facilities may have released hazardous materials that may impact children, teachers, staff and others at the schools. Finally, existing schools may also be impacted by naturally occurring hazardous materials, such as asbestos, arsenic, or methane.

Some school districts have requested DTSC's assistance to address environmental contamination for existing schools. Under the Voluntary Cleanup Program, DTSC has overseen investigations and remediation at existing schools.

Environmental assessments at existing schools may include the following objectives:

- Evaluate and respond to public complaints or school district requests
- Determine if a release of hazardous materials exists at the site
- Estimate potential threat to public health and the environment
- Determine if an interim action is required to address an immediate threat to the community
- Determine if a response action is required to address long-term threats
- Provide for the informational needs of the community.

If DTSC determines that response action is necessary and that there may be an imminent and/or substantial endangerment to the public health or welfare or to the

environment because of the release and/or the threatened release of the hazardous substances at the site, the following statutes apply:

- Health and Safety Code section 25358.3, subdivision (a) authorizes DTSC to take various actions, including issuance of an Imminent or Substantial Endangerment Determination and Order, when DTSC determines that there may be an imminent or substantial endangerment to the public health or welfare or to the environment, because of a release or a threatened release of a hazardous substance.

- Health and Safety Code section 25355.5, subdivision (a)(1)(B) authorizes DTSC to issue an order establishing a schedule for removing or remedying a release of a hazardous substance at a site, or for correcting the conditions that threaten the release of a hazardous substance. The order may include, but is in not limited to requiring specific dates by which the nature and extent of a release shall be determined and the site adequately characterized, a remedial action plan prepared and submitted to DTSC for approval, and a removal or remedial action completed.

- Health and Safety Code section 25355.5, subdivision (a)(1)(C) authorizes DTSC to enter into an enforceable agreement with a responsible party for the site which requires the party to take necessary corrective action to remove the threat of the release, or to determine the nature and extent of the release and adequately characterize the site, prepare a remedial action plan, and complete the necessary removal or remedial actions, as required in the approved remedial action plan.

- Health and Safety Code section 58009 authorizes DTSC to commence and maintain all proper and necessary actions and proceedings to enforce its rules and regulations; to enjoin and abate nuisances related to matters within its jurisdiction which are dangerous to health; to compel the performance of any act specifically enjoined upon any person, officer, or board, by any law of this state relating to matters within its jurisdiction; and/or on matters within its jurisdiction, to protect and preserve the public health.

- Health and Safety Code section 58010 authorizes DTSC to abate public nuisances related to matters within its jurisdiction.

APPENDIX B EDUCATION CODE AND CALIFORNIA CODE OF REGULATIONS REFERENCES

CALIFORNIA EDUCATION CODE

Accessed on January 22, 2008
<http://www.leginfo.ca.gov/cgi-bin/calawquery?codesection=edc&codebody=&hits=20>

Title 1. General Education Code Provisions
Division 1. General Education Code Provisions
Part 10. School Bonds
Chapter 12.5. Leroy F. Greene School Facilities Act of 1998
Article 12. Charter Schools
17078.54.
Part 10.5. School Facilities
Chapter 1. Schoolsites
Article 1. General Provisions
17210.
17210.1.
17213.1.
17213.2.
Chapter 3. Construction of School Buildings
Article 2. Plans
17268.

CALIFORNIA CODE OF REGULATIONS

Accessed on January 22, 2008
<http://ccr.oal.ca.gov/linkedslice/default.asp?SP=CCR-1000&Action=Welcome>

Title 22. Social Security
Division 4.5. Environmental Health Standards for the Management of Hazardous Waste
Chapter 51.5. Assessment of School Sites
Article 1. Phase I Environmental Site Assessments (Proposed New and Expanding School Sites
§ 69100. Purpose.
§ 69101. Applicability.
§ 69102. Definitions.
§ 69103. References.
§ 69104. Preparation of a Phase I and Phase I Addendum.
§ 69105. Sampling for Lead in Soil.
§ 69106. Sampling for OCPs in Soil.
§ 69107. Sampling for PCBs in Soil.
§ 69108. Phase I Recommendations.
§ 69109. Phase I Addendum Recommendations.

CALIFORNIA EDUCATION CODE
Title 1. General Education Code Provisions
Division 1. General Education Code Provisions
Part 10. School Bonds
Chapter 12.5. Leroy F. Greene School Facilities Act of 1998
Article 12. Charter Schools

17078.54. (a) An eligible project under this article shall include funding, as permitted by this chapter, for new construction or rehabilitation of a school facility for charter school pupils, as set forth in this article. A project may include, but is not limited to, the cost of retrofitting an existing building for charter school purposes, purchasing a building, or retrofitting a building that has been purchased by the charter school, if those costs have not been previously funded under this chapter, but may not exceed the amounts set forth in subdivision (b). Existing school buildings made available by a school district that will be rehabilitated for the purposes of this article are not subject to Article 6 (commencing with Section 17073.10). An allocation of funds shall not be made for a school facility that is less than 15 years old.

(b) The maximum amount of the funding pursuant to this article shall be determined by calculating the charter school's per-pupil grant amount plus other allowable costs as set forth in this chapter. Funding shall be provided by the authority for new facility construction or rehabilitation as set forth in Section 17078.58.

(c) To be funded under this article, a project shall comply with all of the following:
(1) It shall meet all the requirements regarding public school construction, plan approvals, toxic substance review, site selection, and site approval, as would any noncharter school project of a school district under this chapter, including, but not limited to, regulations adopted by the State Architect pursuant to Section 17280.5 relating to the retrofitting of existing buildings, as applicable.
(2) Notwithstanding any provision of law to the contrary, including, but not limited to paragraph (1), the board, after consulting with the relevant regulatory agencies, shall, to the extent feasible, adopt regulations establishing a process for projects to be subject to a streamlined method for obtaining regulatory approvals for all requirements described in paragraph (1), except for the requirements of the Field Act as defined in Section 17281 which shall be complied with in the same manner as any other project under this chapter.
(3) The board shall fund only new construction to be physically located within the geographical jurisdiction of a school district.

(d) Facilities funded pursuant to this article shall have a 50 percent local share matching obligation that may be paid by the applicant through lease payments in lieu of the matching share, or as otherwise set forth in this article, including, but not limited to, Section 17078.58.

(e) The authority may charge its administrative costs against the respective 2002, 2004, or 2006 Charter School Facilities Account, which shall be subject to the approval of the Department of Finance and which may not exceed 2.5 percent of the account.

PART 10.5. SCHOOL FACILITIES
CHAPTER 1. SCHOOLSITES
Article 1. General Provisions

17210. As used in this article, the following terms have the following meanings:

(a) "Administering agency" means any agency designated pursuant to Section 25502 of the Health and Safety Code.

(b) "Environmental assessor" means a class II environmental assessor registered by the Office of Environmental Health Hazard Assessment pursuant to Chapter 6.98 (commencing with Section 25570) of Division 20 of the Health and Safety Code, a professional engineer registered in this state, a geologist registered in this state, a certified engineering geologist registered in this state, or a licensed hazardous substance contractor certified pursuant to Chapter 9 (commencing with Section 7000) of Division 3 of the Business and Professions Code. A licensed hazardous substance contractor shall hold the equivalent of a degree from an accredited public or private college or university or from a private postsecondary educational institution approved by the Bureau for Private Postsecondary and Vocational Education with at least 60 units in environmental, biological, chemical, physical, or soil science; engineering; geology; environmental or public health; or a directly related science field. In addition, any person who conducts phase I environmental assessments shall have at least two years' experience in the preparation of those assessments and any person who conducts a preliminary endangerment assessment shall have at least three years' experience in conducting those assessments.

(c) "Handle" has the meaning the term is given in Article 1 (commencing with Section 25500) of Chapter 6.95 of Division 20 of the Health and Safety Code.

(d) "Hazardous air emissions" means emissions into the ambient air of air contaminants that have been identified as a toxic air contaminant by the State Air Resources Board or by the air pollution control officer for the jurisdiction in which the project is located. As determined by the air pollution control officer, hazardous air emissions also means emissions into the ambient air from any substance identified in subdivisions (a) to (f), inclusive, of Section 44321 of the Health and Safety Code.

(e) "Hazardous material" has the meaning the term is given in subdivision (d) of Section 25260 of the Health and Safety Code.

(f) "Operation and maintenance," "removal action work plan," "respond," "response," "response action," and "site" have the meanings those terms are given in Article 2 (commencing with Section 25310) of the state act.

(g) "Phase I environmental assessment" means a preliminary assessment of a property to determine whether there has been or may have been a release of a hazardous material, or whether a naturally occurring hazardous material is present, based on reasonably available information about the property and the area in its vicinity. A phase I environmental assessment may include, but is not limited to, a review of

public and private records of current and historical land uses, prior releases of a hazardous material, data base searches, review of relevant files of federal, state, and local agencies, visual and other surveys of the property, review of historical aerial photographs of the property and the area in its vicinity, interviews with current and previous owners and operators, and review of regulatory correspondence and environmental reports. Sampling or testing is not required as part of the phase I environmental assessment. A phase I environmental assessment conducted pursuant to the requirements adopted by the American Society for Testing and Materials for due diligence for commercial real estate transactions and that includes a review of all reasonably available records and data bases regarding current and prior gas or oil wells and naturally occurring hazardous materials located on the site or located where they could potentially effect the site, satisfies the requirements of this article for conducting a phase I environmental assessment unless and until the Department of Toxic Substances Control adopts final regulations that establish guidelines for a phase I environmental assessment for purposes of schoolsites that impose different requirements from those imposed by the American Society for Testing and Materials.

(h) "Preliminary endangerment assessment" means an activity that is performed to determine whether current or past hazardous material management practices or waste management practices have resulted in a release or threatened release of hazardous materials, or whether naturally occurring hazardous materials are present, which pose a threat to children's health, children's learning abilities, public health or the environment. A preliminary endangerment assessment requires sampling and analysis of a site, a preliminary determination of the type and extent of hazardous material contamination of the site, and a preliminary evaluation of the risks that the hazardous material contamination of a site may pose to children's health, public health, or the environment, and shall be conducted in a manner that complies with the guidelines published by the Department of Toxic Substances Control entitled "Preliminary Endangerment Assessment: Guidance Manual," including any amendments that are determined by the Department of Toxic Substances Control to be appropriate to address issues that are unique to schoolsites.

(i) "Proposed schoolsite" means real property acquired or to be acquired or proposed for use as a schoolsite, prior to its occupancy as a school.

(j) "Regulated substance" means any material defined in subdivision (g) of Section 25532 of the Health and Safety Code.

(k) "Release" has the same meaning the term is given in Article 2 (commencing with Section 25310) of Chapter 6.8 of Division 20 of the Health and Safety Code, and includes a release described in subdivision (d) of Section 25321 of the Health and Safety Code.

(l) "Remedial action plan" means a plan approved by the Department of Toxic Substances Control pursuant to Section 25356.1 of the Health and Safety Code.

(m) "State act" means the Carpenter-Presley-Tanner Hazardous Substance Account Act (Chapter 6.8 (commencing with Section 25300) of Division 20 of the Health and Safety Code).

17210.1. (a) Notwithstanding any other provision of law:

(1) For sites addressed by this article for which school districts elect to receive state funds pursuant to Chapter 12.5 (commencing with Section 17070.10) of Part 10, the state act applies to schoolsites where naturally occurring hazardous materials are present, regardless of whether there has been a release or there is a threatened release of a hazardous material.

(2) For sites addressed by this article for which school districts elect to receive state funds pursuant to Chapter 12.5 (commencing with Section 17070.10) of Part 10, all references in the state act to hazardous substances shall be deemed to include hazardous materials and all references in the state act to public health shall be deemed to include children's health.

(3) All risk assessments conducted by school districts that elect to receive state funds pursuant to Chapter 12.5 (commencing with Section 17070.10) of Part 10 at sites addressed by this article shall include a focus on the risks to children's health posed by a hazardous materials release or threatened release, or the presence of naturally occurring hazardous materials, on the schoolsite.

(4) The response actions selected under this article shall, at a minimum, be protective of children's health, with an ample margin of safety.

(b) In implementing this article, a school district shall provide a notice to residents in the immediate area prior to the commencement of work on a preliminary endangerment assessment utilizing a format developed by the Department of Toxic Substances Control.

(c) Nothing in this article shall be construed to limit the authority of the Department of Toxic Substances Control or the State Department of Education to take any action otherwise authorized under any other provision of law.

(d) Unless the Legislature otherwise funds its costs for overseeing actions taken pursuant to this article, the Department of Toxic Substances Control shall comply with Chapter 6.66 (commencing with Section 25269) of Division 20 of the Health and Safety Code when recovering its costs incurred in carrying out its duties pursuant to this article.

(e) Article 11 (commencing with Section 25220) of Chapter 6.5 of Division 20 of the Health and Safety Code does not apply to schoolsites at which all necessary response actions have been completed.

17213.1. As a condition of receiving state funding pursuant to Chapter 12.5 (commencing with Section 17070.10), the governing board of a school district shall comply with subdivision (a), and is not required to comply with subdivision (a) of Section 17213, prior to the acquisition of a schoolsite, or if the school district owns or leases a schoolsite, prior to the construction of a project.

(a) Prior to acquiring a schoolsite, the governing board shall contract with an environmental assessor to supervise the preparation of, and sign, a Phase I environmental assessment of the proposed schoolsite unless the governing board decides to proceed directly to a preliminary endangerment assessment, in which case it shall comply with paragraph (4).

(1) The Phase I environmental assessment shall contain one of the following recommendations:

(A) A further investigation of the site is not required.

(B) A preliminary endangerment assessment is needed, including sampling or testing, to determine the following:
(i) If a release of hazardous material has occurred and, if so, the extent of the release.
(ii) If there is the threat of a release of hazardous materials.
(iii) If a naturally occurring hazardous material is present.

(2) If the Phase I environmental assessment concludes that further investigation of the site is not required, the signed assessment, proof that the environmental assessor meets the qualifications specified in subdivision (b) of Section 17210, and the renewal fee shall be submitted to the Department of Toxic Substances Control. The Department of Toxic Substances Control shall conduct its review and approval, within 30 calendar days of its receipt of that assessment, proof of qualifications, and the renewal fee. In those instances in which the Department of Toxic Substances Control requests additional information after receipt of the Phase I environmental assessment pursuant to paragraph (3), the Department of Toxic Substances Control shall conduct its review and approval within 30 calendar days of its receipt of the requested additional information. If the Department of Toxic Substances Control concurs with the conclusion of the Phase I environmental assessment that a further investigation of the site is not required, the Department of Toxic Substances Control shall approve the Phase I environmental assessment and shall notify, in writing, the State Department of Education and the governing board of the school district of the approval.

(3) If the Department of Toxic Substances Control determines that the Phase I environmental assessment is not complete or disapproves the Phase I environmental assessment, the department shall inform the school district of the decision, the basis for the decision, and actions necessary to secure department approval of the Phase I environmental assessment. The school district shall take actions necessary to secure the approval of the Phase I environmental assessment, elect to conduct a preliminary endangerment assessment, or elect not to pursue the acquisition or the construction project. To facilitate completion of the Phase I environmental assessment, the information required by this paragraph may be provided by telephonic or electronic means.

(4) (A) If the Department of Toxic Substances Control concludes after its review of a Phase I environmental assessment pursuant to this section that a preliminary endangerment assessment is needed, the Department of Toxic Substances Control shall notify, in writing, the State Department of Education and the governing board of

the school district of that decision and the basis for that decision. The school district shall submit to the State Department of Education the Phase I environmental assessment and requested additional information, if any, that was reviewed by the Department of Toxic Substances Control pursuant to that subparagraph. Submittal of the Phase I assessment and additional information, if any, to the State Department of Education shall be prior to the State Department of Education issuance of final site or plan approvals affect by that Phase I assessment.

(B) If the Phase I environmental assessment concludes that a preliminary endangerment assessment is needed, or if the Department of Toxic Substances Control concludes after it reviews a Phase I environmental assessment pursuant to this section that a preliminary endangerment assessment is needed, the school district shall either contract with an environmental assessor to supervise the preparation of, and sign, a preliminary endangerment assessment of the proposed schoolsite and enter into an agreement with the Department of Toxic Substances Control to oversee the preparation of the preliminary endangerment assessment or elect not to pursue the acquisition or construction project. The agreement entered into with the Department of Toxic Substances Control may be entitled an "Environmental Oversight Agreement" and shall reference this paragraph. A school district may, with the concurrence of the Department of Toxic Substances Control, enter into an agreement with the Department of Toxic Substances Control to oversee the preparation of a preliminary endangerment assessment without first having prepared a Phase I environmental assessment. Upon request from the school district, the Director of the Department of Toxic Substances Control shall exercise its authority to designate a person to enter the site and inspect and obtain samples pursuant to Section 25358.1 of the Health and Safety Code, if the director determines that the exercise of that authority will assist in expeditiously completing the preliminary endangerment assessment. The preliminary endangerment assessment shall contain one of the following conclusions:

(i) A further investigation of the site is not required.

(ii) A release of hazardous materials has occurred, and if so, the extent of the release, that there is the threat of a release of hazardous materials, or that a naturally occurring hazardous material is present, or any combination thereof.

(5) The school district shall submit the preliminary endangerment assessment to the Department of Toxic Substances Control for its review and approval and to the State Department of Education for its files. The school district may entitle a document that is meant to fulfill the requirements of a preliminary endangerment assessment a "preliminary environmental assessment" and that document shall be deemed to be a preliminary endangerment assessment if it specifically refers to the statutory provisions whose requirements it intends to meet and the document meets the requirements of a preliminary endangerment assessment.

(6) At the same time a school district submits a preliminary endangerment assessment to the Department of Toxic Substances Control pursuant to paragraph (5), the school district shall publish a notice that the assessment has been submitted to the department in a local newspaper of general circulation, and shall post the notice in a prominent manner at the proposed schoolsite that is the subject of that notice. The notice shall state the school district's determination to make the preliminary

endangerment assessment available for public review and comment pursuant to subparagraph (A) or (B):

(A) If the school district chooses to make the assessment available for public review and comment pursuant to this subparagraph, it shall offer to receive written comments for a period of at least 30 calendar days after the assessment is submitted to the Department of Toxic Substances Control, commencing on the date the notice is originally published, and shall hold a public hearing to receive further comments. The school district shall make all of the following documents available to the public upon request through the time of the public hearing:

(i) The preliminary endangerment assessment.

(ii) The changes requested by the Department of Toxic Substances Control for the preliminary endangerment assessment, if any.

(iii) Any correspondence between the school district and the Department of Toxic Substances Control that relates to the preliminary endangerment assessment.

For the purposes of this subparagraph, the notice of the public hearing shall include the date and location of the public hearing, and the location where the public may review the documents described in clauses (i) to (iii), inclusive. If the preliminary endangerment assessment is revised or altered following the public hearing, the school district shall make those revisions or alterations available to the public. The school district shall transmit a copy of all public comments received by the school district on the preliminary endangerment assessment to the Department of Toxic Substances Control. The Department of Toxic Substances Control shall complete its review of the preliminary endangerment assessment and public comments received thereon and shall either approve or disapprove the assessment within 30 calendar days of the close of the public review period. If the Department of Toxic Substances Control determines that it is likely to disapprove the assessment prior to its receipt of the public comments, it shall inform the school district of that determination and of any action that the school district is required to take for the Department of Toxic Substances Control to approve the assessment.

(B) If the school district chooses to make the preliminary endangerment assessment available for public review and comment pursuant to this subparagraph, the Department of Toxic Substances Control shall complete its review of the assessment within 60 calendar days of receipt of the assessment and shall either return the assessment to the school district with comments and requested modifications or requested further assessment or concur with the adequacy of the assessment pending review of public comment. If the Department of Toxic Substances Control concurs with the adequacy of the assessment, and the school district proposes to proceed with site acquisition or a construction project, the school district shall make the assessment available to the public on the same basis and at the same time it makes available the draft environmental impact report or negative declaration pursuant to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) for the site, unless the document developed pursuant to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code) will not be made available until more than 90 days after the assessment is approved, in which case the school district shall, within 60 days of the approval of the assessment, separately publish a notice of the availability of the

assessment for public review in a local newspaper of general circulation. The school district shall hold a public hearing on the preliminary endangerment assessment and the draft environmental impact report or negative declaration at the same time, pursuant to the California Environmental Quality Act (Division 13 (commencing with Section 21000) of the Public Resources Code). All public comments pertaining to the preliminary endangerment assessment shall be forwarded to the Department of Toxic Substances Control immediately. The Department of Toxic Substances Control shall review the public comments forwarded by the school district and shall approve or disapprove the preliminary endangerment assessment within 30 days of the district's approval action of the environmental impact report or the negative declaration.

(7) The school district shall comply with the public participation requirements of Sections 25358.7 and 25358.7.1 of the Health and Safety Code and other applicable provisions of the state act with respect to those response actions only if further response actions beyond a preliminary endangerment assessment are required and the district determines that it will proceed with the acquisition or construction project.

(8) If the Department of Toxic Substances Control disapproves the preliminary endangerment assessment, it shall inform the district of the decision, the basis for the decision, and actions necessary to secure the Department of Toxic Substances Control approval of the assessment. The school district shall take actions necessary to secure the approval of the Department of Toxic Substances Control of the preliminary endangerment assessment or elect not to pursue the acquisition or construction project.

(9) If the preliminary endangerment assessment determines that a further investigation of the site is not required and the Department of Toxic Substances Control approves this determination, it shall notify the State Department of Education and the school district of its approval. The school district may then proceed with the acquisition or construction project.

(10) If the preliminary endangerment assessment determines that a release of hazardous material has occurred, that there is the threat of a release of hazardous materials, that a naturally occurring hazardous material is present, or any combination thereof, that requires further investigation, and the Department of Toxic Substances Control approves this determination, the school district may elect not to pursue the acquisition or construction project. If the school district elects to pursue the acquisition or construction project, it shall do all of the following:

(A) Prepare a financial analysis that estimates the cost of response action that will be required at the proposed schoolsite.

(B) Assess the benefits that accrue from using the proposed schoolsite when compared to the use of alternative schoolsites, if any.

(C) Obtain the approval of the State Department of Education that the proposed schoolsite meets the schoolsite selection standards adopted by the State Department of Education pursuant to subdivision (b) of Section 17251.

(D) Evaluate the suitability of the proposed schoolsite in light of the recommended alternative schoolsite locations in order of merit if the school district has requested the assistance of the State Department of Education, based upon the standards of the State Department of Education, pursuant to subdivision (a) of Section 17251.

(11) The school district shall reimburse the Department of Toxic Substances Control for all of the department's response costs.

(b) The costs incurred by the school districts when complying with this section are allowable costs for purposes of an applicant under Chapter 12.5 (commencing with Section 17070.10) of Part 10 and may be reimbursed in accordance with Section 17072.13.

(c) A school district that releases a Phase I environmental assessment, a preliminary endangerment assessment, or information concerning either of these assessments, any of which is required by this section, may not be held liable in any action filed against the school district for making either of these assessments available for public review.

(d) The changes made to this section by the act amending this section during the 2001 portion of the 2001-02 Regular Session do not apply to a schoolsite acquisition project or a school construction project, if either of the following occurred on or before the effective date of the act amending this section during the 2001 portion of the 2001-02 Regular Session:
(1) The final preliminary endangerment assessment for the project was approved by the Department of Toxic Substances Control pursuant to this section as this section read on the date of the approval.
(2) The school district seeking state funding for the project completed a public hearing for the project pursuant to this section, as this section read on the date of the hearing.

17213.2. As a condition of receiving state funds pursuant to Chapter 12.5 (commencing with Section 17070.10), all of the following apply:

(a) If a preliminary endangerment assessment prepared pursuant to Section 17213.1 discloses the presence of a hazardous materials release, or threatened release, or the presence of naturally occurring hazardous materials, at a proposed schoolsite at concentrations that could pose a significant risk to children or adults, and the school district owns the proposed schoolsite, the school district shall enter into an agreement with the Department of Toxic Substances Control to oversee response action at the site and shall take response action pursuant to the requirements of the state act as may be required by the Department of Toxic Substances Control.

(b) Notwithstanding subdivision (a), a school district need not take action in response to a release of hazardous material to groundwater underlying the schoolsite if the release occurred at a site other than the schoolsite and if the following conditions apply:
(1) The school district did not cause or contribute to the release of a hazardous material to the groundwater.
(2) Upon the request of the Department of Toxic Substances Control or its authorized representative the school district provides the Department of Toxic Substances Control or its authorized representative with access to the schoolsite.
(3) The school district does not interfere with the response action activities.

(c) If at anytime during the response action the school district determines that there has been a significant increase in the estimated cost of the response action, the school district shall notify the State Department of Education.

(d) A school district that is required by the Department of Toxic Substances Control to take response action at a proposed schoolsite is subject to both of the following prohibitions:

(1) The school district may not begin construction of a school building until the Department of Toxic Substances Control determines all of the following:
(A) That the construction will not interfere with the response action.
(B) That site conditions will not pose a significant threat to the health and safety of workers involved in the construction of the school building.
(C) That the nature and extent of any release or threatened release of hazardous materials or the presence of any naturally occurring hazardous materials have been fully characterized.

(2) The school district may not occupy a school building following construction until it obtains from the Department of Toxic Substances Control a certification that all response actions, except for operation and maintenance activities, necessary to ensure that hazardous materials at the schoolsite no longer pose a significant risk to children and adults at the schoolsite have been completed and that the response action standards and objectives established in the final removal action work plan or remedial action plan have been met and are being maintained. After a school building is constructed and occupied, a school district may continue with ongoing operation and maintenance activities if the Department of Toxic Substances Control certifies before occupancy that neither site conditions nor the ongoing operation and maintenance activities pose a significant risk to children or adults at the schoolsite.

(e) If, at anytime during construction at a schoolsite, a previously unidentified release or threatened release of a hazardous material or the presence of a naturally occurring hazardous material is discovered, the school district shall cease all construction activities at the sites notify the Department of Toxic Substances Control, and take actions required by subdivision (a) that are necessary to address the release or threatened release or the presence of any naturally occurring hazardous materials. Construction may be resumed if the Department of Toxic Substances Control determines that the construction will not interfere with any response action necessary to address the hazardous material release or threatened release or the presence of a naturally occurring hazardous material, determines that the site conditions will not pose a significant threat to the health and safety of workers involved in the construction of the schoolsite, and certifies that the nature and extent of the release, threatened release, or presence of a naturally occurring hazardous material have been fully characterized.

(f) Construction may proceed at any portions of the site that the Department of Toxic Substances Control determines are not affected by the release or threatened release of hazardous materials, or presence of any naturally occurring hazardous materials, provided that all of the following apply:
(1) Those portions of the site have been fully characterized.

(2) The Department of Toxic Substances Control determines that the construction will not interfere with any response action necessary to address the release or threatened release of hazardous materials, or presence of any naturally occurring hazardous materials.
(3) The site conditions will not pose a significant threat to the health and safety of workers involved with construction.

(g) The Department of Toxic Substances Control shall notify the State Department of Education, the Division of the State Architect, and the Office of Public School Construction when the Department of Toxic Substances Control certifies that all necessary response actions have been completed at a schoolsite. The Department of Toxic Substances Control shall also notify the Division of the State Architect whenever a response action has an impact on the design of a school facility and shall specify the conditions that must be met in the design of the school facility in order to protect the integrity of the response action.

(h) The school district shall reimburse the Department of Toxic Substances Control for all response costs incurred by the department.

(i) The costs incurred by the school districts when complying with this section are allowable costs for purposes of an applicant under Chapter 12.5 (commencing with Section 17070.10) of Part 10 and may be reimbursed in accordance with Section 17072.13.

CHAPTER 3. CONSTRUCTION OF SCHOOL BUILDINGS
Article 2. Plans

17268. (a) The governing board of a school district that elects not to receive state funds pursuant to Chapter 12.5 (commencing with Section 17070.10) may not approve a project for the construction of a new school building, as defined in Section 17283, unless the project and its lead agency comply with the same requirements specified in subdivision (a) of Section 17213 for schoolsite acquisition.

(b) As a condition to receiving state funds pursuant to Chapter 12.5 (commencing with Section 17070.10, the governing board of a school district may not approve a project for the construction of a new school building or schoolsite on leased or acquired land unless the project and the school district comply with the requirements specified in Sections 17213.1 and 17213.2.

(c) The project shall not be subject to subdivision (b) for a minor addition to a school if the project is eligible for a categorical or statutory exemption under guidelines issued pursuant to Section 21083 of the Public Resources Code, as set forth in the California Environmental Quality Act.

(d) "School building," as used in this section, means any building designed and constructed to be used for elementary or secondary school purposes by a school district.

(e) The requirements of Sections 17213, 17213.1 and 17213.2 shall not apply to a schoolsite if the acquisition occurred prior to January 1, 2000, to the extent a school district is subject to the requirements set forth in those sections pursuant to a judicial order or an order issued by, or an agreement with the Department of Toxic Substances Control regarding that site, and the school district is in full compliance with that order or agreement.

(f) For purposes of this section, the acceptance of construction bids shall constitute approval of the project.

CALIFORNIA CODE OF REGULATIONS
Title 22. Social Security
Division 4.5. Environmental Health Standards for The Management Of Hazardous Waste
Chapter 51.5. Assessment of School Sites
Article 1. Phase I Environmental Site Assessments (Proposed New and Expanding School Sites)

§ 69100. Purpose.

The purpose of these regulations is to provide guidelines for a Phase I Environmental Site Assessment (Phase I) conducted prior to acquisition of a school site, or where the school district owns or leases a school site, prior to the construction of a project (hereinafter referred to as "Proposed School Site") under title 1, division 1, part 10.5, chapter 1 of the Education Code (commencing with section 17210). This article contains guidelines for completion of a Phase I and a Phase I Addendum. Procedures are included for sampling and submitting analytical results for lead in soil from lead-based paint, organochlorine pesticides in soil from termiticide application, and/or polychlorinated biphenyls in soil from electrical transformers in Phase I Addendum reports to the Department of Toxic Substances Control.

NOTE

Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY

1. New chapter 51.5 (sections 69100-69107) and section filed 9-3-2002 as an emergency; operative 9-3-2002 (Register 2002, No. 36). A Certificate of Compliance must be transmitted to OAL by 1-2-2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9-3-2002 order transmitted to OAL 12-26-2002 and filed 2-10-2003 (Register 2003, No. 7).
3. Amendment of chapter 51.5 heading, new article 1 heading and amendment of section filed 11-27-2006 as an emergency; operative 11-27-2006 (Register 2006, No. 48). A Certificate of Compliance must be transmitted to OAL by 3-27-2007 or emergency language will be repealed by operation of law on the following day.
4. Amendment of chapter 51.5 heading, new article 1 heading and amendment of section refiled 3-20-2007 as an emergency; operative 3-20-2007 (Register 2007, No. 12). A Certificate of Compliance must be transmitted to OAL by 7-18-2007 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3-20-2007 order, including further amendment of section, transmitted to OAL 6-15-2007 and filed 7-18-2007 (Register 2007, No. 29).

§ 69101. Applicability.

This article applies to the preparation of a Phase I pursuant to section 17213.1 of the Education Code.

NOTE

Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY

1. New section filed 9-3-2002 as an emergency; operative 9-3-2002 (Register 2002, No. 36). A Certificate of Compliance must be transmitted to OAL by 1-2-2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9-3-2002 order transmitted to OAL 12-26-2002 and filed 2-10-2003 (Register 2003, No. 7).
3. Amendment filed 11-27-2006 as an emergency; operative 11-27-2006 (Register 2006, No. 48). A Certificate of Compliance must be transmitted to OAL by 3-27-2007 or emergency language will be repealed by operation of law on the following day.
4. Amendment refiled 3-20-2007 as an emergency; operative 3-20-2007 (Register 2007, No. 12). A Certificate of Compliance must be transmitted to OAL by 7-18-2007 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3-20-2007 order transmitted to OAL 6-15-2007 and filed 7-18-2007 (Register 2007, No. 29).

§ 69102. Definitions.

The definitions set forth in this section govern interpretation of this article. Unless the context requires otherwise and except as provided in this section, definitions contained in title 1, division 1, part 10.5, chapter 1 of the Education Code (commencing with section 17210) or in division 20, chapter 6.8 of the Health and Safety Code (commencing with section 25300) apply to the terms used in this article. If a definition appears in both title 1, division 1, part 10.5, chapter 1 of the Education Code and in division 20, chapter 6.8 of the Health and Safety Code, the definition in the Education Code governs interpretation of this article.

(a) "Department" means the Department of Toxic Substances Control.

(b) "Lead" means lead from lead-based paint only, for purposes of this article.

(c) "OCPs" means organochlorine pesticides from termiticide application only, for purposes of this article.

(d) "PCBs" means polychlorinated biphenyls from electrical transformers only, for purposes of this article.

(e) "Phase I" means a Phase I Environmental Site Assessment which is a preliminary assessment of a site to determine whether there has been or may have been a release of a hazardous material, or whether a naturally occurring hazardous material is present, based on reasonably available information about the site and the area in its vicinity.

(f) "Phase I Addendum" means a report containing results of sampling and analysis, limited to results of lead in soil from lead-based paint, organochlorine pesticides in soil from termiticide application, and/or polychlorinated biphenyls in soil from electrical transformers, for sites where these contaminants are the only potential release or presence of hazardous materials identified in the Phase I. A Phase I Addendum is submitted to the Department along with or after the submittal of the Phase I.

(g) "USEPA Test Methods" means "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods" as referenced in section 69103, subsection (a)(2).

NOTE

Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY

1. New section filed 9-3-2002 as an emergency; operative 9-3-2002 (Register 2002, No. 36). A Certificate of Compliance must be transmitted to OAL by 1-2-2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9-3-2002 order, including amendment of first paragraph, transmitted to OAL 12-26-2002 and filed 2-10-2003 (Register 2003, No. 7).
3. Amendment of first paragraph and subsection (a), new subsection (c) and subsection relettering filed 11-27-2006 as an emergency; operative 11-27-2006 (Register 2006, No. 48). A Certificate of Compliance must be transmitted to OAL by 3-27-2007 or emergency language will be repealed by operation of law on the following day.
4. Amendment of first paragraph and subsection (a), new subsection (c) and subsection relettering refiled 3-20-2007 as an emergency; operative 3-20-2007 (Register 2007, No. 12). A Certificate of Compliance must be transmitted to OAL by 7-18-2007 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3-20-2007 order, including further amendment of section, transmitted to OAL 6-15-2007 and filed 7-18-2007 (Register 2007, No. 29).

§ 69103. References.

(a) When used in this article, the following publications are incorporated by reference:

(1) "American Society for Testing and Materials (ASTM) Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process," ASTM Standard E-1527-05, approved November 1, 2005; available from American Society for Testing and Materials, 100 Barr Harbor Drive, Post Office Box C700, West Conshohocken, PA 19428-2959, (610) 832-9585; website http:// www/astm.org

(2) "Test Methods for Evaluating Solid Waste, Physical/Chemical Methods," EPA Publication SW-846 Third Edition, November 1986, as amended by Updates I (July, 1992), II (September, 1994), IIA (August, 1993), IIB (January, 1995), III (December, 1996), IIIA (April, 1998), IIIB (June, 2005), draft IVA (May, 1998) and draft IVB (November, 2000); available from the Superintendent of Documents, United States Government Printing Office, Washington, DC 20402, (202) 512-1800; website http://www.epa.gov/epaoswer/hazwaste/test/sw846.htm

(3) "USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review," EPA 540/R-99/008; October 1999, available from National Technical Information Service (NTIS), United States Department of Commerce, 5285 Port Royal Road, Springfield, VA 22161; (703) 487-4650; website http:// www.epa.gov/superfund/programs/clp/guidance.htm

(4) "USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review," EPA 540/R-04/004, October 2004, available from the United States Environmental Protection Agency website http:// www.epa.gov/superfund/programs/clp/guidance.htm

(5) "Guidance on Environmental Data Verification and Data Validation," EPAQA/G-8; EPA 240/R-02/004; November 2002 available from United States Environmental Protection Agency, Quality Staff (2811 R), 1200 Pennsylvania Avenue, NW,

Washington, DC 20460; (202) 564-6830; website http://www.epa.gov/quality/qa_docs.html

NOTE

Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY

1. New section filed 9-3-2002 as an emergency; operative 9-3-2002 (Register 2002, No. 36). A Certificate of Compliance must be transmitted to OAL by 1-2-2003 or emergency language will be repealed by operation of law on the following day.
2. Change without regulatory effect amending subsection (a)(5) filed 11-18-2002 pursuant to section 100, title 1, California Code of Regulations (Register 2002, No. 47).
3. Certificate of Compliance as to 9-3-2002 order, including amendment of subsections (a)(3) and (a)(4), transmitted to OAL 12-26-2002 and filed 2-10-2003 (Register 2003, No. 7).
4. Amendment filed 11-27-2006 as an emergency; operative 11-27-2006 (Register 2006, No. 48). A Certificate of Compliance must be transmitted to OAL by 3-27-2007 or emergency language will be repealed by operation of law on the following day.
5. Amendment refiled 3-20-2007 as an emergency; operative 3-20-2007 (Register 2007, No. 12). A Certificate of Compliance must be transmitted to OAL by 7-18-2007 or emergency language will be repealed by operation of law on the following day.
6. Certificate of Compliance as to 3-20-2007 order, including further amendment of section, transmitted to OAL 6-15-2007 and filed 7-18-2007 (Register 2007, No. 29).

§ 69104. Preparation of a Phase I and Phase I Addendum.

(a) A Phase I shall be prepared for the Proposed School Site pursuant to this article and section 17213.1, subdivision (a), of the Education Code. The Phase I shall be submitted to the Department for review and approval.

(b) The Phase I shall be conducted in accordance with the ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process cited in section 69103, subsection (a)(1).

(c) The Phase I shall include, but is not limited to, the following:
(1) a site map describing the boundary of the project and the current development on the property;
(2) a description of the intended use of the property that includes whether the school district intends to use all or a portion of the parcel, the type of site (new or expanding), type of school proposed (grade levels of students), and the disposition of any existing structures;
(3) past and existing land uses, including but not limited to, easements; adjacent properties; former governmental use; residential, industrial, or commercial uses; and
(4) recommendations consistent with section 69108 of this article.

(d) In addition to the contaminants and sources identified in the ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process cited in section 69103, subsection (a)(1), the Phase I shall identify and evaluate all sources for the potential release or presence of hazardous material on the Proposed School Site, including, but not limited to, the following:
(1) agricultural use,
(2) debris or stockpiles,

(3) fill material,
(4) electrical transformers, oil filled electrical equipment, or hydraulic systems,
(5) government use or ownership,
(6) grading activities
(7) illegal drug manufacturing,
(8) lead-based paint application,
(9) mines,
(10) naturally occurring hazardous materials,
(11) petroleum deposits or use,
(12) railroad use or easements,
(13) residential use,
(14) surface drainage pathways,
(15) termiticide application, and
(16) utility easements.

(e) If a Phase I Addendum is submitted more than 180 days subsequent to the date that the Phase I was conducted, or if a Phase I was conducted for the Proposed School Site more than 180 days prior to its submittal to the Department, information to verify current site conditions shall be submitted to the Department. Verification activities include, but are not limited to, the following: (1) document any changes to site conditions or site boundaries; and (2) update interviews, searches, reviews, visual inspections, and declarations as described in the ASTM Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process cited in section 69103, subsection (a)(1).

(f) A Phase I Addendum shall be submitted to the Department for review and approval along with or after submittal of the Phase I for the site. The Phase I Addendum shall include recommendations consistent with section 69109 of this article and may contain results of sampling and analysis as follows:
(1) lead in soil performed in accordance with the sampling protocols described in section 69105 of these regulations,
(2) OCPs in soil performed in accordance with the sampling protocols described in section 69106 of these regulations, and/or
(3) PCBs in soil performed in accordance with the sampling protocol described in section 69107 of these regulations.

NOTE

Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY

1. New section filed 9-3-2002 as an emergency; operative 9-3-2002 (Register 2002, No. 36). A Certificate of Compliance must be transmitted to OAL by 1-2-2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9-3-2002 order, including amendment of subsection (e), transmitted to OAL 12-26-2002 and filed 2-10-2003 (Register 2003, No. 7).
3. Amendment of subsections (a)-(c) filed 11-27-2006 as an emergency; operative 11-27-2006 (Register 2006, No. 48). A Certificate of Compliance must be transmitted to OAL by 3-27-2007 or emergency language will be repealed by operation of law on the following day.

4. Amendment of subsections (a)-(c) refiled 3-20-2007 as an emergency; operative 3-20-2007 (Register 2007, No. 12). A Certificate of Compliance must be transmitted to OAL by 7-18-2007 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3-20-2007 order, including amendment of section heading and further amendment of section, transmitted to OAL 6-15-2007 and filed 7-18-2007 (Register 2007, No. 29).

§ 69105. Sampling for Lead in Soil.

(a) The school district may choose to submit sampling data for lead in soil in one of the following reports: (1) the Phase I Addendum; or (2) the Preliminary Endangerment Assessment, in accordance with subsections (b) through (h) below:

(b) Lead-based paint evaluation.Unless the Department determines that lead in soil is not a concern based on review of the Phase I, soil samples shall be collected for any structures on the Proposed School Site with paint or surface coatings, with the exception of residential structures constructed on or after January 1, 1979, and schools constructed on or after January 1, 1993, to evaluate possible lead in soil.

(c) Prior to demolition of structures or removal of foundations or slabs, or movement of soils on the Proposed School Site, pre-demolition sampling for lead in soil shall be implemented in accordance with the following protocols:

(1) Sample collection. Surface soil samples (zero to six inches) shall be collected from around the perimeter of the structures, in areas with the highest potential for lead deposits (such as under windows, doors, porches, fences and stairs, and in drainage areas). If concrete or asphalt borders a structure, surface soil samples (zero to six inches) shall be collected from the nearest unpaved areas where associated run off may collect. The Department may require collection of samples from underneath existing paved areas, based upon the history of the site. The Department shall be consulted to determine the number and location of samples necessary to adequately evaluate possible lead in soil at the Proposed School Site.

(2) Additional sample collection. If lead is detected in soil samples, the Department may require additional step-out samples on the Proposed School Site to determine the horizontal and vertical extent of contamination.

(d) If demolition of structures has occurred, but foundations or slabs are present and the site has not been graded, post-demolition sampling for lead in soil shall be implemented in accordance with the following protocols:

(1) Sample collection. Surface soil samples (zero to six inches) shall be collected from two sets of sampling locations around the perimeter of the former structures. The first set should be collected in areas with the highest potential for lead deposits (such as under pre-existing windows, doors, porches, doors, fences and stairs, and in drainage areas). The second set should be collected at the extent of soil disturbed by removal of demolition debris. If concrete or asphalt borders a structure, surface soil samples (zero to six inches) shall be collected from the nearest unpaved areas where associated run off may collect. If soil is exposed within the footprints of former structures, surface soil samples (zero to six inches) shall be collected within the footprints. The Department may require collection of samples from underneath existing paved areas, based upon the history of the site. The Department shall be consulted to determine the number and location of samples necessary to adequately evaluate possible lead in soil at the Proposed School Site.

(2) Additional sample collection. If lead is detected in soil samples, the Department may require additional step-out samples on the Proposed School Site to determine the horizontal and vertical extent of contamination.

(e) If demolition of structures, removal of foundations or slabs, or movement of soil on the Proposed School Site has occurred, post-demolition sampling for lead in soil shall be implemented in accordance with the following protocols:
(1) Sample collection. The Proposed School Site shall be divided into grids as determined in consultation with the Department, and surface (zero to six inches) and subsurface (two to three feet) soil samples shall be collected from the center of each grid.
(2) Additional sample collection. If lead is detected in soil samples, the Department may require additional step-out samples on the Proposed School Site to determine the horizontal and vertical extent of contamination.

(f) Sample analysis. Soil samples shall be analyzed for lead using USEPA Test Methods, and may include laboratory and on-site field analyses for lead in soil using portable X-Ray Fluorescence (XRF) instrumentation. The uppermost soil from the core (closest to ground surface) shall be analyzed.

(g) Laboratory quality control. Quality Control (QC) procedures specified in USEPA Test Methods shall be followed. The data shall be qualified in accordance with the National Functional Guidelines cited in section 69103, subsection (a)(4) and USEPA guidance cited in section 69103, subsection (a)(5).

(h) Data Submission. Data identifying concentrations of lead detected in soil samples collected from the Proposed School Site shall be submitted to the Department.

NOTE

Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY

1. New section filed 9-3-2002 as an emergency; operative 9-3-2002 (Register 2002, No. 36). A Certificate of Compliance must be transmitted to OAL by 1-2-2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9-3-2002 order, including amendment of subsection (a), transmitted to OAL 12-26-2002 and filed 2-10-2003 (Register 2003, No. 7).
3. Amendment of section heading and section filed 7-18-2007; operative 7-18-2007 pursuant to Government Code section 11343.4 (Register 2007, No. 29).

§ 69106. Sampling for OCPs in Soil.

(a) The school district may choose to submit sampling data for OCPs in soil in one of the following reports: 1) the Phase I Addendum; or 2) the Preliminary Endangerment Assessment, in accordance with subsections (b) through (h) below:

(b) OCP evaluation. Unless the Department determines that OCPs in soil are not a concern based on review of the Phase I, soil samples shall be collected for any structures on the Proposed School Site with wood components constructed prior to January 1, 1989, to evaluate possible OCPs in soil.

(c) Prior to demolition of structures or removal of foundations or slabs, or movement of soil on the Proposed School Site, pre-demolition sampling for OCPs in soil shall be implemented in accordance with the following protocols:

(1) Sample collection. Surface (zero to six inches) and subsurface (two to three feet) soil samples shall be collected from around the perimeter of the structures, in areas with the highest potential for OCPs (such as near footings). If the structures have raised floors or porches, surface soil samples (zero to six inches) shall be collected beneath these areas. If concrete or asphalt borders a structure, the Department shall require collection of surface (zero to six inches) and subsurface (two to three feet) soil samples underneath existing paved areas. The Department shall be consulted to determine the number and location of samples necessary to adequately evaluate possible OCPs in soil at the Proposed School Site.

(2) Additional sample collection. If OCPs are detected in soil samples, the Department may require additional step-out samples on the Proposed School Site to determine the horizontal and vertical extent of contamination.

(d) If demolition of structures has occurred, but foundations or slabs are present and the site has not been graded, post-demolition sampling for OCPs in soil shall be implemented in accordance with the following protocols:

(1) Sample collection. Surface (zero to six inches) and subsurface (two to three feet) soil samples shall be collected from two sets of sampling locations around the perimeter of the structures. The first set should be collected in areas with the highest potential for OCPs (such as near footings). The second set should be collected at the extent of soil disturbed by removal of demolition debris. If soil is exposed within the footprints of former structures, surface (zero to six inches) and subsurface (two to three feet) soil samples shall be collected within the footprints. If concrete or asphalt borders a structure, the Department shall require collection of surface (zero to six inches) and subsurface (two to three feet) soil samples underneath existing paved areas. The Department shall be consulted to determine the number and location of samples necessary to adequately evaluate possible OCPs in soil at the Proposed School Site.

(2) Additional sample collection. If OCPs are detected in soil samples, the Department may require additional step-out samples on the Proposed School Site to determine the horizontal and vertical extent of contamination.

(e) If demolition of structures, removal of foundations or slabs, or movement of soil on the Proposed School Site has occurred, post-demolition sampling for OCPs in soil shall be implemented in accordance with the following protocols:

(1) Sample collection. The Proposed School Site shall be divided into grids as determined in consultation with the Department, and surface (zero to six inches) and subsurface (two to three feet) soil samples shall be collected from the center of each grid.

(2) Additional sample collection. If OCPs are detected in soil samples, the Department may require additional step-out samples on the Proposed School Site to determine the horizontal and vertical extent of contamination.

(f) Sample analysis. Soil samples shall be analyzed for OCPs using USEPA Test Methods.

(g) Laboratory quality control. Quality Control (QC) procedures specified in USEPA Test Methods shall be followed. The data shall be qualified in accordance with the National Functional Guidelines cited in section 69103, subsection (a)(3) and USEPA guidance cited in section 69103, subsection (a)(5).

(h) Data submission. Data identifying concentrations of OCPs detected in soil samples collected from the Proposed School Site shall be submitted to the Department.

NOTE

Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY

1. New section filed 9-3-2002 as an emergency; operative 9-3-2002 (Register 2002, No. 36). A Certificate of Compliance must be transmitted to OAL by 1-2-2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9-3-2002 order, including amendment of subsections (a) and (d), transmitted to OAL 12-26-2002 and filed 2-10-2003 (Register 2003, No. 7).
3. Renumbering of former section 69106 to section 69107 and new section 69106 filed 11-27-2006 as an emergency; operative 11-27-2006 (Register 2006, No. 48). A Certificate of Compliance must be transmitted to OAL by 3-27-2007 or emergency language will be repealed by operation of law on the following day.
4. Renumbering of former section 69106 to section 69107 and new section 69106 refiled 3-20-2007 as an emergency; operative 3-20-2007 (Register 2007, No. 12). A Certificate of Compliance must be transmitted to OAL by 7-18-2007 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3-20-2007 order, including further amendment of section, transmitted to OAL 6-15-2007 and filed 7-18-2007 (Register 2007, No. 29).

§ 69107. Sampling for PCBs in Soil.

(a) The school district may choose to submit data for PCBs in soil in one of the following reports: (1) the Phase I Addendum; or (2) the Preliminary Endangerment Assessment, in accordance with subsections (b) through (f) below.

(b) Electrical transformer evaluation. Soil samples shall be collected for any historical (even if removed or replaced by a newer transformer) or current transformers on or adjacent to the Proposed School Site that were installed before January 1, 1979, to evaluate possible PCBs in soil on the Proposed School Site.

(c) Sample collection. Surface (zero to six inches) and subsurface (two to three feet) soil samples shall be collected in close proximity to the base of each pole or pad-mounted electrical transformer. If PCBs are detected in soil samples, the Department may require additional step-out samples on the Proposed School Site to determine the horizontal and vertical extent of contamination.

(d) Sample analysis. Initially, only surface soil samples (zero to six inches) shall be analyzed for PCBs using USEPA Test Methods. If PCBs are detected in surface soil samples (zero to six inches), the subsurface soil samples (two to three feet) that were collected at depth shall also be analyzed.

(e) Laboratory quality control. QC procedures specified in USEPA Test Methods shall be followed. The data shall be qualified in accordance with the National Functional Guidelines cited in section 69103, subsection (a)(3) and USEPA guidance cited in section 69103, subsection (a)(5).

(f) Data submission. Data identifying concentrations of PCBs detected in soil samples collected from the Proposed School Site shall be submitted to the Department.

NOTE

Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY

1. New section filed 9-3-2002 as an emergency; operative 9-3-2002 (Register 2002, No. 36). A Certificate of Compliance must be transmitted to OAL by 1-2-2003 or emergency language will be repealed by operation of law on the following day.
2. Certificate of Compliance as to 9-3-2002 order, including amendment of subsections (a) and (d), transmitted to OAL 12-26-2002 and filed 2-10-2003 (Register 2003, No. 7).
3. Renumbering of former section 69107 to section 69108 and renumbering of former section 69106 to section 69107 filed 11-27-2006 as an emergency; operative 11-27-2006 (Register 2006, No. 48). A Certificate of Compliance must be transmitted to OAL by 3-27-2007 or emergency language will be repealed by operation of law on the following day.
4. Renumbering of former section 69107 to section 69108 and renumbering of former section 69106 to section 69107 refiled 3-20-2007 as an emergency; operative 3-20-2007 (Register 2007, No. 12). A Certificate of Compliance must be transmitted to OAL by 7-18-2007 or emergency language will be repealed by operation of law on the following day.
5. Certificate of Compliance as to 3-20-2007 order, including amendment of section heading and section, transmitted to OAL 6-15-2007 and filed 7-18-2007 (Register 2007, No. 29).

§ 69108. Phase I Recommendations.

The Phase I shall contain one of the following recommendations:

(a) A further investigation of the Proposed School Site is not required since the Phase I demonstrates that neither a release of hazardous material nor the presence of a naturally occurring hazardous material, which would pose a threat to public health or the environment, was indicated at the site.

(b) Lead in soil from lead-based paint, OCPs in soil from termiticide application, and/or PCBs in soil from electrical transformers are the only potential sources of contamination at a Proposed School Site and an evaluation is recommended but has not yet been completed. Results of this evaluation will be submitted to the Department in a Phase I Addendum.

(c) A Preliminary Endangerment Assessment is needed, including sampling or testing to determine one or more of the following:

(1) If a release of hazardous material has occurred and, if so, the extent of the release.
(2) If there is the threat of a release of hazardous materials.
(3) If a naturally occurring hazardous material is present.

NOTE

Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY
1. Renumbering of former section 69107 to new section 69108, including amendment of subsection (a), filed 11-27-2006 as an emergency; operative 11-27- 2006 (Register 2006, No. 48). A Certificate of Compliance must be transmitted to OAL by 3-27-2007 or emergency language will be repealed by operation of law on the following day.
2. Renumbering of former section 69107 to section 69108, including amendment of subsection (a), refiled 3-20-2007 as an emergency; operative 3-20-2007 (Register 2007, No. 12). A Certificate of Compliance must be transmitted to OAL by 7-18-2007 or emergency language will be repealed by operation of law on the following day.
3. Certificate of Compliance as to 3-20-2007 order, including further amendment of section, transmitted to OAL 6-15-2007 and filed 7-18-2007 (Register 2007, No. 29).

§ 69109. Phase I Addendum Recommendations.

The Phase I Addendum shall contain one of the following recommendations:

(a) A further investigation of the Proposed School Site is not required. A Phase I Addendum that contains data from evaluation of lead, OCPs, or PCBs in soil may recommend that further investigation of the site is not required if all of the following apply:
(1) the Phase I Addendum demonstrates that lead in soil from lead-based paint, OCPs in soil from termiticide application, and/or PCBs in soil from electrical transformers are the only potential sources of contamination at a Proposed School Site; and
(2) concentrations of lead, OCPs, and/or PCBs in soil do not exceed concentrations determined by the Department on a case-by-case basis to be protective of public health and the environment.

(b) A Preliminary Endangerment Assessment is needed, including sampling or testing, to determine one or more of the following:
(1) If a release of hazardous material has occurred and, if so, the extent of the release.
(2) If there is the threat of a release of hazardous materials.
(3) If a naturally occurring hazardous material is present.

NOTE
Authority cited: Section 58012, Health and Safety Code; and Section 17210(g), Education Code. Reference: Sections 17210(g) and 17213.1, Education Code.

HISTORY
1. New section filed 7-18-2007; operative 7-18-2007 pursuant to Government Code section 11343.4 (Register 2007, No. 29).

APPENDIX C STATE BOND FUNDING FOR NEW CONSTRUCTION AND MODERNIZATION OF SCHOOLS

School districts, county offices of education, and charter entities seeking state funding for new school sites and facilities to house children, from kindergarten through grade 12, must first obtain site and plan approvals from the California Department of Education (CDE), School Facilities Planning Division. CDE reviews proposed sites and plans for compliance with the Education Code and standards established the California Code of Regulations, title 5. CDE approvals for new school sites and new construction plans require specific prior site evaluation determinations issued by DTSC (Ed. Code, § 17078.54, subd. (c)(1)(A) and § 17268). CDE also requires additional documentation for a variety of other potential hazards not under DTSC authority, including proximity to airports, railroads, highways, pipelines, power lines, seismic and geologic conditions, etc. (Ed. Code, §§ 17211, 17212, 17212.5, 17213, 17215, and 17215.5).

Place following text in box: [2007/2008 CDE statistics show:

- 1,052 California school districts, including county offices of education, elementary, unified, and high school districts and special schools
- 9,674 public schools
- 299,503 classrooms
- 6,243,016 students enrolled]

School districts for kindergarten through grade 12 apply for funding to buy land, construct new buildings, and modernize existing buildings through the School Facility Program. The funding allocation for a school district is based on a formula which considers "unserved" students and expected enrollment following construction.

Place following text in box: [The Office of Public School Construction has projected a five-year (2007-2012) need for 29,214 new classrooms for an additional 664,131 unhoused students. Average total construction costs per school range from $12 million for elementary schools (average site size is 9.6 acres) to $46 million for high schools (average site size is 45 acres).]

The state and school districts share the cost of facilities equally (50 percent match) for new construction projects; however, a district facing unusual circumstances may apply for "financial hardship" funding to offset its local share of costs (Ed. Code, § 17075.10 et. seq.). The state funds the School Facility Program by issuing general obligation bonds. At the local level, school districts typically meet most of their matching requirement and other construction needs by issuing local general obligation bonds; these bonds are repaid using local property tax revenue. School districts also receive funds from developer fees and special local bonds, such as "Mello-Roos" bonds.

In order to apply to the Department of General Services, Office of Public School Construction, for state bond funds for project costs associated with property acquisition, environmental investigations, response actions, demolition and new construction, a school district, county office of education, or charter entity must be deemed "eligible", according to the provisions of the School Facility Program, receiving independent approvals from the following state agencies:

- CDE
- DTSC
- Department of General Services, Division of State Architect

The State Allocation Board is the policy level body for the programs administered by the Office of Public School Construction. The State Allocation Board is responsible for determining the allocation of state resources (proceeds from General Obligation Bond Issues and other designated state funds) used for the new construction and modernization of local public school facilities. The State Allocation Board is also charged with responsibility for the administration of the School Facility Program, the State Relocatable Classroom Program, and the Deferred Maintenance Program.

The State Allocation Board meets monthly to apportion funds to the school districts, act on appeals, and adopt policies and regulations pertinent to the programs it administers. The State Allocation Board is comprised of the following members:

- Director of the Department of Finance
- Director of the Department of General Services
- Superintendent of Public Instruction
- Three members of the Senate
- Three members of the Assembly
- One appointee named by the Governor

Available state bond funding for site acquisition and school construction is allocated by the State Allocation Board on a "first-come, first-serve" basis. Historically, funds have been rapidly depleted as demand has exceeded supply. Statewide bond propositions to support school facility funding require majority approval from California voters, and subsequent approval by the legislature and the Governor.

Place following text in box: [Successful statewide bond acts have included Proposition 47 in November 2002, and Proposition 55 in March 2004, which included a combined total of $21.9 billion for kindergarten through grade 12 school construction and modernization. In 2006, Proposition 1D was approved, providing $10.4 billion for K-12 schools and public colleges and universities; a total of $5.7 billion was allocated for school construction, modernization, overcrowding relief, joint use, and charter schools.]

APPENDIX D COST RECOVERY AND OVERSIGHT AGREEMENTS

STATUTORY AUTHORITY FOR DTSC COST RECOVERY

The Education Code contains several provisions to ensure that DTSC recovers its costs in carrying out its duties pursuant to requirements for oversight of the school environmental review process, as noted in the following sections:

- 17210.1(d) requires DTSC to follow Chapter 6.66 Oversight Costs (commencing with Section 25269 of the Health and Safety Code).
- 17213.1(a)(2) specifies that DTSC shall conduct its review of Phase Is within 30 calendar days of receipt of the assessment, proof of qualifications, and a "renewal fee". Although no agreement with DTSC is required, school districts and LEAs must submit Phase I reports to DTSC, accompanied by a fee to cover DTSC oversight costs associated with the review of the Phase I. DTSC will issue refunds to school districts and LEAs if Phase I costs are less than the fee amount; DTSC may also issue invoices to school districts or LEAs for Phase I costs that exceed the standard fee amount.
- 17213.1(a)(4)(B) specifies that school districts shall enter into an agreement with DTSC to oversee the preparation of the PEA, which may be titled, "Environmental Oversight Agreement".
- 17213.1(a)(11) states that the school district shall reimburse DTSC for all response costs it incurs.
- 17213.1(b) provides that DTSC costs incurred by school districts are allowable costs for purposes of an applicant under Chapter 12.5 of Part 10 and may be reimbursed in accordance with section 17072.13.
- 17213.2(h) states that the school district shall reimburse DTSC for all of its response costs.

Unless the Legislature otherwise funds its costs for oversight of the school environmental review process, DTSC shall comply with chapter 6.66 (commencing with section 25269) of division 20 of the Health and Safety Code when recovering its costs incurred in carrying out its duties pursuant to Education Code, sections 17210 through 17224. The Health and Safety Code includes specific sections which address DTSC cost recovery requirements, several of which are noted as follows:

- 25269 states that DTSC oversight costs must include both direct and indirect costs.
- 25343 authorizes DTSC to assess oversight fees for the PEA investigation, including payment for development of draft reports and review of the final documents.

- 25360 requires recovery of all costs associated with the investigation and cleanup of contaminated sites, as incurred by DTSC.

COST ESTIMATES

DTSC prepares a cost estimate, attached as an exhibit to each agreement. The cost estimate is based on the scope of work, and identifies projected numbers of hours by classification of DTSC staff (project managers, toxicologists, geologists, etc.). Projected hours are converted into projected costs using DTSC "Cost Recovery and Reimbursement Contract Estimation Rates", developed by the DTSC Fiscal Systems Unit. These rates are periodically updated to reflect direct rates, i.e., the current highest hourly salary rate for each classification, and indirect rates, i.e., a share of departmental overhead costs, including sick leave, vacation, operations, program administrative support, executive office support, budgeting, accounting, human resources, legal and business services, etc.

COST RECOVERY PROCESS

The final costs for DTSC oversight will depend on the number of hours expended by DTSC staff. Calculation of charges may vary depending on the number of work hours per month. Fee amounts are adjusted annually to reflect increases or decreases in the cost-of-living, as measured by the Consumer Price Index, issued by the Department of Labor or a successor agency of the United States Government.

Under the terms of the agreements signed with DTSC, school districts are required to pay all costs incurred by DTSC for review of documents described in the agreements, and in providing oversight of all related activities, including meetings, field work, etc. DTSC typically requests payment of 50 percent of estimated costs in advance, payable at the time the agreement is signed by both parties, and held in an account maintained by the DTSC Cost Recovery Unit. Thereafter, DTSC provides school districts with quarterly invoices for each project which contain a detailed accounting and supporting documentation of all expenditures during the previous quarter. With each invoice, DTSC provides a "Summary by Activity" Report which includes detailed information so that Proponents can relate the charges on the invoice to the services received. The Summary by Activity report for each school project is generated from compilations of daily logs and timesheets, where DTSC staff record program cost account (PCA) codes, including specific site and activity codes. DTSC project managers monitor charges to their assigned projects, ensuring that charges are accurate and appropriate. Payments delayed over 60 days may be subject to interest, in accordance with Health and Safety Code, section 25360.1. DTSC costs may be challenged or appealed by a school district in accordance with provisions in the agreements.

DTSC AGREEMENTS

Except for the Phase I and Phase I Addendum, investigation and cleanup activities overseen by DTSC are subject to terms of voluntary or enforceable agreements, signed by a school districts and DTSC. DTSC has developed different agreements for different project phases.

Environmental Oversight Agreement

When DTSC makes a determination that a PEA is required, DTSC will request that the school district enter into an Environmental Oversight Agreement. The Environmental Oversight Agreement identifies the purpose and scope of the investigation; establishes requirements for communication, payment, record retention, access, notification of field activities and environmental conditions, submittal and preservation of documents; specifies rights and liabilities, and amendment, modification, and termination requirements, and identifies responsibilities of the school district and DTSC. The project cost estimate for DTSC oversight costs, scope of work, project map, and project schedule will be attached to the Agreement as Exhibits. The Environmental Oversight Agreement may cover and SSI, if requested.

Cleanup Agreement

To move forward with an SSI or a cleanup, the district has the choice of entering into a Voluntary Cleanup Agreement or a School Cleanup Agreement. This decision is based on the funding needs of a school district and other financial and contractual.

Voluntary Cleanup Agreement

Under Education Code, section 17213.2, subdivision (a), if the PEA determines that further investigation or cleanup is required, and the school district decides to proceed with investigation or cleanup of the site, the school district is required to enter into a cleanup agreement with DTSC to oversee the investigation or cleanup. The Voluntary Cleanup Agreement is similar to an Environmental Oversight Agreement in format, and may be prepared for an SSI and/or cleanup, pursuant to Health and Safety Code, section 25355.5, subdivision (a)(1)(C).

The Voluntary Cleanup Agreement identifies the purpose and scope of the investigation; establishes requirements for communication, payment, record retention, access, notification of field activities and environmental conditions, submittal and preservation of documents; specifies rights and liabilities and amendment, modification, and termination requirements; and identifies responsibilities of the school district and DTSC. The project cost estimate for DTSC oversight costs, scope of work, project map, and project schedule will each be attached to the Agreement as Exhibits.

School Cleanup Agreement

Because the school district has the ability to terminate the agreement at will, the Voluntary Cleanup Agreement is not deemed an acceptable contractual agreement for those districts that require early funding of a response action and construction in conjunction with a partial site approval. DTSC will require a school district to enter into an School Cleanup Agreement for sites where DTSC will also sign School Facilities Planning Division form 4.15 (see section 2.3.3.4. above) to qualify for “full and final funding” or “partial site approval” with full construction funding from the Office of Public School Construction/State Allocation Board, prior to completion of all remedial activities

required by DTSC. DTSC developed the School Cleanup Agreement as an enforceable agreement which provides DTSC oversight of a response action beyond the PEA process. While similar in format to the Voluntary Cleanup Agreement, the School Cleanup Agreement differs by including significant provisions for dispute resolution, termination procedures, DTSC enforcement and assessment of penalties for non-compliance. The School Cleanup Agreement ensures that cleanup and remediation will be completed following school district receipt of final site and plan approvals from CDE, and apportionment of funding from the State Allocation Board.

Operation and Maintenance Agreement

The Operation and Maintenance Agreement is an enforceable document that requires the school district to implement an approved Operation and Maintenance Plan under DTSC oversight. The Operation and Maintenance Agreement will specify requirements for the school district to implement an approved Operations and Maintenance Plan under DTSC oversight to monitor and protect the remedy, to minimize the potential for uncontrolled exposures, to control exposures during intrusive work in/on soils, and to have a contingency plan in case the remedy should fail. DTSC will prepare the Operation and Maintenance Agreement, while the consultant for the school district or will prepare the Operation and Maintenance Plan. The Operation and Maintenance Agreement references the major elements of the response action, and specifies ongoing requirements for inspections, additional investigation and mitigation (if needed), stop work orders, schedule extensions, cost reimbursement, and dispute resolution.

AGREEMENT TERMINATION

An Environmental Oversight Agreement or Voluntary Cleanup Agreement may be terminated for any reason by either party (DTSC, school district or other project proponent) after giving 30 days written notice to the other party. A School Cleanup Agreement may be terminated by the school district after giving 30 days written notice to DTSC and if at least one of the following conditions applies.

- The district withdraws its application for state funds prior to completion of required response action
- CDE does not provide final site or plan approval
- SAB does not approve full funding

DTSC retains its authority to take enforcement action if, during the investigation or cleanup, it determines that the site presents a serious health threat, and proper and timely action is not otherwise being taken.

APPENDIX E SUMMARY OF SELECTED FURTHER ACTION FOLLOWING SSI

CLEANUP (REMOVAL OR REMEDIAL ACTION)

Place following text in box: [Between 2000 and 2007, DTSC required response actions at approximately 10% of the prospective school sites evaluated.]
With some exceptions, most cleanup at school sites has been excavation and off-site disposal of contaminated soils. Cleanup (removal or remedial actions) are covered by Health and Safety Code, division 20, chapter 6.8 (Ed. Code, § 17213.2, subd. (a)). This process requires preparation of a Removal Action Workplan (RAW) or a Remedial Action Plan (RAP) to:

- Describe the nature and extent of contamination found at the site.
- Identify remedial action goals to be achieved.
- Identify applicable laws and requirements.
- Evaluate alternative removal and remedial actions in accordance with specific criteria (e.g., effectiveness, implementability, and cost).
- Provide a detailed engineering plan for implementation of the removal or remedial action.
- Identify all sampling, monitoring and control activities to identify and prevent public or worker exposures to hazardous materials during response activities.
- Establish a schedule for implementation of cleanup activities.
- Disclose any significant environmental impacts of the proposed project in accordance with California Environmental Quality Act guidelines.
- Provide for public communication, notification to interested parties concerning the proposed cleanup, solicitation of and response to public comments prior to final remedy selection for the site.
- Identify any long-term operation and monitoring requirements if hazardous materials will be left in place.

DTSC oversees the remedy selection and decision-making process, and also the implementation and completion of the cleanup. DTSC will act as lead agency to comply with the California Environmental Quality Act for cleanup actions. Upon completion of cleanup activities, the school district will prepare a Removal or Remedial Action Completion Report. The district or LEA may not occupy a school building until DTSC has determined that “no further action is required” and certified that all required response actions, with the exception of operation and maintenance, have been completed (Ed. Code, § 17213.2, subd. (d)(2)), and “No Further Action” is required.

OPERATION AND MAINTENANCE

After a school building is constructed and occupied, a school district may continue with ongoing operation and maintenance activities if DTSC certifies before occupancy that neither site conditions nor the ongoing operation and maintenance activities pose a significant threat to children or adults at the school site. In situations where school site response actions will leave hazardous materials in place at concentrations exceeding acceptable health or safety risk levels, DTSC may require long-term operation and maintenance activities to be incorporated into the remedy selection document (RAW or RAP), and may also require preparation of remedial designs and "as-builts" for engineering controls. Operation and maintenance activities have been required at school sites with naturally occurring asbestos in soils, where the remedy is generally placement of a clean soil cap to prevent exposure to dusts containing naturally occurring asbestos. Additionally, operation and maintenance activities have been required at school sites where methane gas has been identified, requiring installation of pipes to vent the gas away from buildings to prevent gas accumulation and possible explosion. In such cases, monitoring and maintenance must be provided throughout the life cycle of the remedy, which may extend throughout future school use and possible thereafter.

A school district may enter into an Operation and Maintenance Agreement with DTSC, then contract prepare an Operation and Maintenance Plan in accordance with DTSC guidelines. The Operation and Maintenance Plan should identify procedures for long-term operation, monitoring, inspections, training, data acquisition, reporting, and maintenance. Future repairs, such as intrusive activities in soils, maintenance, or replacement of hardscape or landscape cap systems, must be performed and documented in accordance with the approved Operation and Maintenance Plan. In the event that the remedy fails, DTSC may require additional investigation and remediation.

LAND USE COVENANT

DTSC may require a land use covenant in situations where school site response actions will leave hazardous materials in place (excepting naturally occurring hazardous materials, such as asbestos and methane) at concentrations exceeding acceptable health or safety risk levels. The purpose of a land use covenant is to ensure that there are sufficient administrative controls to:

- Prevent inappropriate land uses.
- Provide information to public regarding residual contamination.
- Carry out long-term mitigation measures.
- Maintain integrity and stability of remedies.
- Ensure notification to subsequent owners of responsibilities for contaminated property.
- Require DTSC approval prior to changes in land use or remedies.
- Require DTSC approval prior to modification and/or termination of institutional controls.
- Provide authority to state to seek remedy in state courts if terms of the Land Use Covenant are violated.

DTSC's statutory authority to enter into and enforce a land use covenants is found in Health and Safety Code, sections 25202.5, 25220 et. seq., 25221.1, 25355.5, subdivision (a)(1)(C), and 25396.5 et. seq. in addition to Civil Code, section 1471. A Land Use Covenant entered into under these statutes remain on the property deed, and bind successor owner. Regulatory requirements for certain Land Use Covenants are contained in Title 22 of the California Code of Regulations, sections 66264.119 and 66265.119. In addition, section 67391.1 was adopted in 2003 to require that Land Use Covenants be recorded for properties where residual contamination has been left in place that is incompatible with unrestricted land use. Additionally, this regulation requires an implementation and enforcement plan for any Land Use Covenant. Assembly Bills 871 and 2436 (Session?) require DTSC to maintain a list of all recorded land use restrictions, including deed restrictions, recorded pursuant to Health and Safety Code sections 25200, 25200.10, 25202.5, 25222.1, 25229, 25230, 25355.5, and 25398.7. The list shall, at a minimum, provide the street address, or if a street address is not available, an equivalent description of location for a rural location or the latitude and longitude, of each property. DTSC shall update the list as new deed restrictions are recorded. DTSC shall make the list available to the public, upon request, and shall make the list available on the DTSC website. The list shall also be incorporated into the list of sites compiled pursuant to section 65962.5 of the Government Code.

APPENDIX F ENVIRONMENTAL FINDINGS DURING SCHOOL CONSTRUCTION

Pursuant to Education Code, section 17213.2, subdivision (e), if a school district discovers a previously unidentified release or threatened release of a hazardous material, or the presence of a naturally occurring hazardous material, at any time during construction at the site, the district shall cease all construction activities and notify DTSC within 24 hours by telephone or e-mail. Additional assessment, investigation, or cleanup may be required. DTSC anticipates such releases may include contamination associated with newly identified underground storage tanks, septic tanks, seepage pits, and other impacted soils. The district should implement interim control measures so as to prevent direct exposure or contaminant migration. DTSC will invoice district for oversight costs, and may require a new agreement signed by the district and DTSC for oversight.

In order to facilitate and expedite DTSC's evaluation to determine if additional investigation or mitigation is required, DTSC requests that the school district provide DTSC with the following written information, as soon as possible after notification:

- Date the contamination was identified
- Description of the environmental concerns (include photographs)
- Estimated horizontal and vertical extent of contamination
- Brief site history (include site code, previous names)
- Site investigation history (maps with borings, data summaries for relevant area)
- Explanation of omission from previous investigations
- Interim control measures implemented (security, fencing, stop work orders)
- Proposed scope of work to characterize contamination
- Proposed mitigation measures (sampling, tank removal, soil excavation)
- Preliminary risk screening evaluation (based on site-specific risk assessment or California Human Health Screening Levels (Cal/EPA 2005) to determine whether the identified contaminants pose a threat to human health and the environment.

All documents, maps, figures, and tables should be labeled appropriately and must meet quality assurance protocols and standards.

Upon receipt of submittals, DTSC will review the submitted information and will either provide input on the proposed investigation or concur with the scope of work. DTSC may send a field representative to assess the situation and provide field support.

Districts choosing to perform investigation or cleanup before receiving DTSC approval do so at the risk of being required by DTSC to conduct additional work under DTSC oversight.

In some cases, due to contamination volume, chemicals of concern, or heightened public interest in the project, DTSC may find it necessary to stop, partially or fully, construction to complete appropriate documents for cleanup (e.g. Removal Action Workplan, Remedial Action Plan) in accordance with Health and Safety Code, division 20, chapter 6.8 (Health & Saf. Code, § 25300 et seq.).

APPENDIX G GUIDELINES FOR SUBMITTING PDF DOCUMENTS TO DTSC

With the introduction of the Department of Toxic Substances Control (DTSC) database, EnviroStor, the public can now download and view certain project related documents online. Due to differences in internet downloading capabilities and resolutions of electronic files, many users have trouble in downloading or viewing documents of large size. The following guidelines have been created to provide consistency in electronic files and allow most users to access these files.

1. Submittal Forms and Formats:
   For all documents required to be given to DTSC, submit one hard (paper) copy and one electronic copy in adobe portable document format (pdf). Include applicable signatures and certification stamps in all submittals.
2. File Size:
   Keep the file size of each PDF document to 8 megabytes (MB) or less. Save color images (e.g., figures, site photos, maps) and supplemental information (e.g., appendices) in separate PDF files for larger documents. If using a scanner, the scanner resolution should be no more than 200 dpi.
3. Saving and Naming PDF files:
   Use the *Save As* option instead of the "Save" option whenever saving changes to PDF file. This will produce a smaller file size.
   Name PDF files using an abbreviated site name, report title, (report section, if multiple files are being uploaded), and date (e.g., Site_report_section_mmddyy, 968-81stAve_PEA_text_072706, etc).
4. Bookmarks:
   For large reports, create bookmarks in the PDF for ease of navigation. Refer to Adobe Acrobat Help for help on creating bookmarks.
5. FTP Server:
   For files that cannot be sent via e-mail, send them to DTSC project staff via the FTP server.
   Link: http://www.dtsc.ca.gov/database/DTSC_FTP_Requests/index.cfm
   Below are the instructions to submit files via the FTP server:
   a. Provide Upload File Information
      Provide information about yourself, the recipient, and the name of the computer file to be uploaded. This tells our system:
      i. to expect and allow your file onto the FTP server,
      ii. to whom the recipient is, and
      iii. to let the recipient know who sent the file.
   b. Transfer the File:
      Send your file to DTSC server within 60 minutes after your information is provided in the step above. You will be provided with an FTP location

after providing the information. You will be notified upon the successful receipt or failure to receive your file.

For further assistance about submitting PDF files, please contact the appropriate DTSC Project Manager, or the EnviroStor Help Desk at (916) 323-3400, or by email to EnviroStor@dtsc.ca.gov.

APPENDIX H PHASE I ENVIRONMENTAL ASSESSMENT REPORT SAMPLE

APPENDIX I PHASE I SITE ASSESSMENT ADDENDUM REPORT SAMPLE

APPENDIX J PEA SCOPING MEETING AGENDA SAMPLE

PEA SCOPING MEETING AGENDA

Date
Time
Location

School District Name
Site Name
(6-digit Site Code)
City

1) Introduction
   a) (Sign-in sheet)

2) School District Expectations
   a) (Schedule, funding constraints, etc.)

3) Overview of PEA process
   a) Summary of the PEA Process
   b) Status of the Environmental Oversight Agreement
   c) Potential determinations
      i) No further action
      ii) Further action required
      iii) Partial site approval

4) Site Background
   a) Site Description
   b) Previous environmental investigations
   c) Phase I results
   d) Historical site uses
   e) Current property use

5) Areas of concern (AOCs)

6) Proposed sampling plan

7) Requirements for the PEA Report
   a) Human health risk assessment-CHHSLs Comparison vs PEA Risk Assessment (unrestricted use vs. school scenario)
   b) Option A vs. Option B
   c) Data validation and data quality assessment
   d) Conclusions and recommendations

8) Proposed PEA Schedule

TASK	PROPOSED COMPLETION DATE
Submit PEA Technical Memorandum or Workplan to DTSC	
DTSC approval of PEA Technical Memorandum or Workplan	
Notify residents of PEA field work	
Conduct PEA field work	
Submit draft PEA Report to DTSC	
PEA comment period (30 days)	
Receive DTSC and public comments on draft PEA Report	
Responses to comments submitted to DTSC	
Complete comment resolution	
Submit final PEA Report to DTSC	
DTSC approval of final PEA Report	

APPENDIX K PRELIMINARY ENVIRONMENTAL ASSESSMENT TECHNICAL MEMORANDUM SAMPLE

APPENDIX L PRELIMINARY ENVIRONMENTAL ASSESSMENT WORKPLAN SAMPLE

APPENDIX M PUBLIC NOTICE SAMPLE FORMATS

Format for Public Notice for Field Work to be Distributed to Residents

SCHOOL DISTRICT LETTERHEAD

DATE: (Date the Work Notice is distributed)

TO: Parents and Neighbors of ABC School **(*or* Neighbors and Community Members)**

FROM: *Name of School District*

REGARDING: Preliminary Environmental Investigation at ABC School **(*or* School Site address)**

We would like to provide you with advance notice of an environmental investigation which will be conducted at ABC School, located at 123 Main Street in Any Town **(*or* School Site Address)**. The investigation will be performed by a licensed contractor under the oversight of the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). The investigation will consist of collection of surface and sub-surface soil samples using a truck mounted drill rig for investigation of the site for possible releases of chemicals used during agricultural activities **(*or* identify recognized environmental condition and type of sampling to be conducted)**. Although an environmental assessment is being conducted at this site, this does not mean hazardous substances are located on this property. Recently enacted state laws now require that all proposed new school sites undergo a complete environmental review, and if necessary, a cleanup to protect students, faculty and staff who will occupy the school.

Field work is scheduled to begin on **Day, Date** and is expected to take approximately **Number** days to complete. All field work will **(or will not)** be conducted during normal business hours **(specify if work will be done on weekends or holidays)**. It is not expected that any street closures will be necessary during the investigation.

After the investigation is complete, the District will prepare and submit a PEA Report to DTSC for review and place the report in a public repository for a 30-day public comment period. During the public comment period, the District will hold a public hearing to discuss the investigation results, and will take pubic comment.

If you have any questions concerning the upcoming soil investigation or other activities at the **proposed school site**, please contact either **Name and Title of School District Representative** at **Telephone Number and E-mail Address,** or the DTSC Project Manager, Name and Title of DTSC Project Manager, at **Telephone Number and E-mail Address.**

Format for Public Notice for Field Work to be Posted at Site

SCHOOL DISTRICT LETTERHEAD

California Unified School District
123 Street name, City Name, CA 90002
(000) 000-0000

WORK NOTICE

SITE INVESTIGATION FIELD ACTIVITIES

Fieldwork activities related to an environmental investigation at the _____ are scheduled to begin the week of _____ and will continue intermittently through _____, including weekends, from 8 a.m. until 5 p.m.

Fieldwork activities will consist of (sampling and analysis of soil? Drilling?), so you may see workers and heavy machinery in or around your neighborhood. Efforts will be taken to minimize noise and disruptions to traffic. No street closures are planned. A licensed contractor, working on behalf of the Los Angeles Unified School District (LAUSD), will perform the fieldwork under the oversight of the **Department of Toxic Substances Control (DTSC),** a state regulatory agency.

Although an assessment will be conducted, this does not mean hazardous substances are located on this property. This Preliminary Environmental Assessment (PEA) will determine whether or not hazardous substances exist at the site, and whether they exist at levels requiring clean up activities.

If you have any questions regarding these activities, please contact:

Name
Project Manager
Department of Toxic Substances Control
Phone

Name
Environmental Assessment Coordinator
_____ Unified School District
Phone

Format for Public Notice for Public Comment Period and Hearing

SCHOOL DISTRICT LETTERHEAD

PUBLIC NOTICE
PUBLIC COMMENT PERIOD AND HEARING
PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT

The [Name of School District] has prepared a Preliminary Environmental Assessment (PEA) Report in accordance with Education Code section 17213.1, subdivision (a)(4)(B). The School District has submitted the PEA Report to DTSC for review and has chosen to make the PEA Report available for public review and comment pursuant to Education Code section 17213.1, subdivision (a)(6)[(A) or (B)].

Project Designation:
[School site name]
[School site address]
[City], [State] [Zip code]

Project Location:
[Provide a description of the size of the site and location.]

Description of Assessment:
[Provide a summary of the findings and conclusions of the PEA Report.]

The PEA and Supporting Documents are Available for Review at:
[Location Name]
[Address]
[City], [State] [Zip Code]
[Contact information or hours, if useful]

Public Comment Period:
A public comment period for the PEA Report begins on [start date] through [end date, minimum of 30 days elapsed]. Written comments on the PEA Report will be accepted from [start date] through [end date, minimum of 30 days]. Comments should be directed to [Contact Name and Contact Information].

Public Hearing:
A public hearing to discuss the PEA Report will be held on [Month Day, Year] at [time] at [location]. Comments on the PEA Report will be accepted during the public hearing.

APPENDIX N PRELIMINARY ENVIRONMENTAL ASSESSMENT REPORT SAMPLE

APPENDIX O AVAILABLE DTSC SAMPLING GUIDELINES

Available DTSC Sampling Guidelines

SUBJECT (in alphabetical order)	TITLE	DESCRIPTION	LINK
DTSC SCHOOL SAMPLING GUIDELINES			
Agricultural Use	*Interim Guidance for Sampling Agricultural Properties (Third Revision)* April 30, 2008	This guidance was initially prepared for use in evaluating soil at proposed new school sites and existing schools undergoing expansion projects where the property was currently or previously used for agricultural activities. Agricultural properties are lands where pesticides were uniformly applied for agricultural purposes consistent with normal application practices, and where other non-agriculturally related activities have been absent	http://www.dtsc.ca.gov/Schools/upload/interim-ag-soils-guidance.pdf
Arsenic	*Arsenic Strategies, Determination of Arsenic Remediation Development of Arsenic Cleanup Goals For Proposed and Existing School Sites* March 21, 2007	Provides standard approach for evaluation of Arsenic in soil and development of cleanup goals.	http://www.dtsc.ca.gov/Schools/upload/Arsenic-Cleanup-Strategies-March-2007.pdf
Data Validation	*Data Validation Memorandum, Summary of the Level II Data Validation for Advanced Technology Laboratory Report ATV5976* April 25, 2006	Provides information associated with data quality validation.	http://www.dtsc.ca.gov/Schools/upload/Data_Validation.pdf
Electrical Transformers	California Code of Regulations, section 69107. Sampling for PCBs in Soil	Sampling protocols for PCBs in soil from electrical transformers.	http://weblinks.westlaw.com/Find/Default.wl?DB=CA%2DADC%2DTOC%3BRVADCCATOC&DocName=22CAADCS69107&FindType=W&AP=&fn=_top&rs=WEBL8.04&vr=2.0&spa=CCR-

SUBJECT (in alphabetical order)	TITLE	DESCRIPTION	LINK
			1000&trailtype=26&Cnt=Document
	Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers Revised June 9, 2006 (non-substantive revisions made September 12, 2006)	Provides a uniform and streamlined approach to initially evaluate proposed school sites where lead from lead-based paint, organochlorine pesticides from termiticide application, and polychlorinated biphenyls form electrical transformers are potential sources of soil contamination. Include guidance for sampling strategies, sample analysis, screening levels, data interpretation and assessment.	http://www.dtsc.ca.gov/Schools/upload/Guidance_Lead_Contamination_060912.pdf
Lead-Based Paint	California Code of Regulations, section 69105. Sampling for Lead in Soil	Sampling protocols for lead in soil from lead-based paint.	http://weblinks.westlaw.com/Find/Default.wl?DB=CA%2DADC%2DTOC%3BRVADCCATOC&DocName=22CAADCS69105&FindType=W&AP=&fn=_top&rs=WEBL8.04&vr=2.0&spa=CCR-1000&trailtype=26&Cnt=Document
	Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers Revised June 9, 2006 (non-substantive revisions made September 12, 2006)	Provides a uniform and streamlined approach to initially evaluate proposed school sites where lead from lead-based paint, organochlorine pesticides from termiticide application, and polychlorinated biphenyls form electrical transformers are potential sources of soil contamination. Include guidance for sampling strategies, sample analysis, screening levels, data interpretation and assessment.	http://www.dtsc.ca.gov/Schools/upload/Guidance_Lead_Contamination_060912.pdf
Methane	*Advisory on Methane*	This advisory provides guidance on investigations and	http://www.dtsc.ca.gov/Schools/up

SUBJECT (in alphabetical order)	TITLE	DESCRIPTION	LINK
	Assessment and Common Remedies at School Sites June 16, 2005	common remedies for school sites where methane gas is the only chemical of concern present in subsurface soils.	load/SMBRP_SCHOOLS_Methane.pdf
Naturally-Occurring Asbestos	*Interim Guidance Naturally Occurring Asbestos (NOA) at School Sites* September 24, 2004	Provides guidance for an assessment, investigation and mitigation for sites where NOA is a potential substance of concern.	http://www.dtsc.ca.gov/Schools/upload/NOA_OM_Plan_Template_101105.pdf
School Construction – Environmental Findings, Hazardous Waste Disposal, and Imported Fill Material	*Protocol for Reporting Environmental Findings During School Construction Hazardous Waste Disposal Procedures and Imported Fill Material at School Sites* January 12, 2006	Protocols for addressing the discovery of a previously unidentified release or threatened release of a hazardous material, or the presence of a naturally-occurring hazardous material, at any time during construction at the site.	http://www.dtsc.ca.gov/Schools/upload/Soil_Disposal_LAUSDr.pdf
Termiticide Application	California Code of Regulations, section 69107. Sampling for OCPs in Soil	Sampling protocols for organochlorine pesticides in soil from termiticide application.	http://weblinks.westlaw.com/Find/Default.wl?DB=CA%2DADC%2DTOC%3BRVADCCATOC&DocName=22CAADCS69106&FindType=W&AP=&fn=_top&rs=WEBL8.04&vr=2.0&spa=CCR-1000&trailtype=26&Cnt=Document
	Interim Guidance, Evaluation of School Sites with Potential Soil Contamination as a Result of Lead from Lead-Based Paint, Organochlorine Pesticides from Termiticides, and Polychlorinated Biphenyls from Electrical Transformers	Provides a uniform and streamlined approach to initially evaluate proposed school sites where lead from lead-based paint, organochlorine pesticides from termiticide application, and polychlorinated biphenyls form electrical transformers are potential sources of soil contamination. Include guidance for sampling strategies, sample analysis, screening levels, data interpretation and assessment.	http://www.dtsc.ca.gov/Schools/upload/Guidance_Lead_Contamination_060912.pdf

SUBJECT (in alphabetical order)	TITLE	DESCRIPTION	LINK
	Revised June 9, 2006 (non-substantive revisions made September 12, 2006)		
Total Petroleum Hydrocarbons	*Interim Guidance Evaluating Total Petroleum Hydrocarbons (TPH) at School Sites* June 1, 2007 (Draft)	Provides guidance to analyzed and evaluate petroleum hydrocarbon contamination associated with school sites.	Draft to be finalized before uploading on the website.
OTHER DTSC SAMPLING GUIDELINES			
Burn Dumps	*Protocol For Burn Dump Site Investigation and Characterization* June 30, 2003	The document provides assistance to responsible parties, responsible party contractors and subcontractors, Solid Waste Local Enforcement Agencies (LEAs), and California state regulatory agencies.	http://www.dtsc.ca.gov/SiteCleanup/upload/SM_POL_Burn-Dump-Protocol.pdf
Groundwater Investigations	*Guidance Manuals for Groundwater Investigations*	Various references for conducting groundwater investigations.	http://www.dtsc.ca.gov/SiteCleanup/Ground_Water_Investigations.cfm
Imported Fill	*Information Advisory Clean Imported Fill Material* October 2001	Identifies procedures that can be used to minimize the possibility of introducing contaminated soil onto a site that requires imported fill material.	http://www.dtsc.ca.gov/Schools/upload/SMP_FS_Cleanfill-Schools.pdf
Mines	*Abandoned Mine Lands Preliminary Assessment Handbook* January 1998	Guidance to evaluate lands with abandoned mines.	http://www.dtsc.ca.gov/SiteCleanup/Brownfields/upload/aml_handbook.pdf
Preliminary Endangerment Assessment	Preliminary Endangerment Assessment Guidance Manual January 1994 (Second Printing, June 1999)	The manual provides approaches to investigate sites within the context of PEA process.	http://www.dtsc.ca.gov/SiteCleanup/Brownfields/upload/SMP_REP_PEA_CH1.pdf http://www.dtsc.ca.gov/SiteCleanup/Brownfields/upload/SMP_REP_

SUBJECT (in alphabetical order)	TITLE	DESCRIPTION	LINK
			PEA_CH2.pdf http://www.dtsc.ca.gov/SiteCleanup/Brownfields/upload/SMP_REP_PEA_CH3.pdf http://www.dtsc.ca.gov/SiteCleanup/Brownfields/upload/SMP_REP_PEA_Appendix.pdf
Soil Gas Investigations	Advisory – Active Soil Gas Investigations January 28, 2003 (under revision)	The advisory provides methodologies useful in obtaining vapor phase data.	http://www.dtsc.ca.gov/LawsRegsPolicies/Policies/SiteCleanup/upload/SMBR_ADV_activesoilgasinvst.pdf
Vapor Intrusion	*Guidance for the Evaluation and Mitigation of Subsurface Vapor Intrusion to Indoor Air (Interim Final)* December 15, 2004 (Revised February 7, 2005)	This Guidance, along with the vapor intrusion guidance from the United States Environmental Protection Agency (USEPA, 2002a), provides technically defensible and consistent approaches for evaluating vapor intrusion to indoor air, based upon the current understanding of exposure pathways.	http://www.dtsc.ca.gov/AssessingRisk/upload/HERD_POL_Eval_Subsurface_Vapor_Intrusion_interim_final.pdf

APPENDIX P SSI SCOPING MEETING AGENDA SAMPLE

SSI SCOPING MEETING AGENDA

Date
Time
Location

School District Name
Site Name
(6-digit Site Code)
City

1) Introduction
   a) (Sign-in sheet)

2) School District Expectations
   a) (Schedule, funding constraints, etc.)

3) Site Background
   a) Site History
   b) Previous assessments/investigations
   c) Areas of concern (AOCs)
   d) Chemical of concern (COCs)

4) Sampling Strategy
   a) Biased/systematic
   b) Media
   c) Locations
   d) Depths
   e) Analytical parameters

5) Proposed SSI Schedule

ACTIVITY	**PROPOSED COMPLETION DATE**
Submit SSI Technical Memorandum or Workplan to DTSC	
DTSC approval of SSI Technical Memorandum or Workplan	
Conduct SSI field work	
Submit draft SSI Report to DTSC	
Complete comment resolution	
Submit final PEA Report to DTSC	
DTSC approval of final PEA Report	

6) Other Issues

7) Conclusions

8) Action Items

APPENDIX Q SUPPLEMENTAL SITE INVESTIGATION TECHNICAL MEMORANDUM SAMPLE

APPENDIX R SUPPLEMENTAL SITE INVESTIGATION WORKPLAN SAMPLE

APPENDIX S SUPPLEMENTAL SITE INVESTIGATION REPORT SAMPLE